Statement of Basis

16 February 2010

Shell Exploration & Production Company—
Yellowhammer Gas Treating & Processing Facility

Facility No. 503-4017

13700 Dauphin Island Parkway
Coden, Mobile Co., AL

Table of Contents

Authority

The proposed second renewal Title V Major Source Operating Permit is issued under the provisions of ADEM Admin. Code R. 335-3-16. The above named applicant has requested authorization to perform the work or operate the facility shown on the application and drawings, plans, and other documents attached hereto or on file with the Air Division of Alabama Department of Environmental Management, in accordance with the terms and conditions of this permit.

This renewal Major Source Operating Permit will cover the Yellowhammer Gas Treating and Processing Facility. This facility is located at 13700 Dauphin Island Parkway near Coden, AL.

Notable Changes

In this Renewal, the following changes will be made:

1. Area Source requirements for 40 CFR 63 Subpart HH will be addressed.
2. More detailed discussions and references for 40 CFR 60 Subparts D_c, GG, KKK, and LLL will be included.
3. Reporting requirements will be simplified and streamlined, including putting all reports on a semi-annual submittal basis.
4. The "Facility-wide Process Gas Stream to Atmosphere" section of the permit will be removed since these requirements are redundant with those addressed in the Flare and Thermal Oxidizer sections.

Recommendations

This Statement of Basis indicates that these sources should meet the requirements of all federal and state rules and regulations, as described on the following pages. Therefore, I recommend that Shell be issued the second renewal of Major Source Operating Permit No. 503-4017 for these sources. Draft permit provisos may be found in Appendix A.

Joel K. Sutton
Industrial Minerals Section
Energy Branch
Air Division

16 February 2010
Date

Facility History

Shell Offshore, Inc., the primary owner, was permitted to begin construction of the Yellowhammer Plant on 25 October 1989. This facility was permitted as a major source with respect to Prevention of Significant Deterioration [PSD]; all limits at this facility were derived under this regulation. These permits were re-issued to Shell Western Exploration & Production Co., Inc., a different subsidiary of Shell Corporation, on 15 June 1992, as the facility operator. On 18 April 1994, the Sulfur Treatment Plant & Thermal Oxidizer was re-permitted with a VOC limit. On 3 October 1996, all permits were re-issued to Shell Onshore, Inc. The initial Title V was issued on 4 April 2000. This permit was modified on 16 June 2000 to correct some language in the Facility Flare section. On 6 July 2006, the First Renewal Title V was issued to Shell Exploration & Production Company, a third different subsidiary of Shell Corporation, and the current operator. The facility is still officially owned by Shell Offshore, Inc.

Table 1 summarizes the permit history of this facility:

Issuance Date	Permittee	Permit Type	Permit No.	Unit(s) Permitted
6 July 2006	Shell Exploration & Production Co.	Title V	N/A	Title V Renewal 1
16 June 2000	Shell Offshore, Inc.	Title V	N/A	Title V Initial, Modification 1; Small changes in the wording of the Facility Flare Section
4 April 2000	Shell Offshore, Inc.	Title V	N/A	Title V Initial
3 October 1996	Shell Offshore, Inc.	Air Permit	X001	Sulfur Treatment Plant & Thermal Oxidizer
3 October 1996	Shell Offshore, Inc.	Air Permit	X002	5000 BHP Turbine
3 October 1996	Shell Offshore, Inc.	Air Permit	X003	48.2 MMBTU/hr Boiler No. 1
3 October 1996	Shell Offshore, Inc.	Air Permit	X004	48.2 MMBTU/hr Boiler No. 2
18 April 1994	Shell Western Exploration & Production, Inc.	Air Permit	X001	Sulfur Treatment Plant & Thermal Oxidizer; New VOC limit for NGL equipment
15 June 1992	Shell Western Exploration & Production, Inc.	Air Permit	X001	Sulfur Treatment Plant & Thermal Oxidizer
15 June 1992	Shell Western Exploration & Production, Inc.	Air Permit	X002	5000 BHP Turbine
15 June 1992	Shell Western Exploration & Production, Inc.	Air Permit	X003	48.2 MMBTU/hr Boiler No. 1
15 June 1992	Shell Western Exploration & Production, Inc.	Air Permit	X004	48.2 MMBTU/hr Boiler No. 2
25 October 1989	Shell Offshore, Inc.	Air Permit	X001	Sulfur Treatment Plant & Thermal Oxidizer
25 October 1989	Shell Offshore, Inc.	Air Permit	X002	5000 BHP Turbine
25 October 1989	Shell Offshore, Inc.	Air Permit	X003	48.2 MMBTU/hr Boiler No. 1
25 October 1989	Shell Offshore, Inc.	Air Permit	X004	48.2 MMBTU/hr Boiler No. 2

Table 1: Facility Permit History

Critical Dates

Shell Exploration & Production Company's Yellowhammer Gas Treating & Processing Facility was issued its existing Major Source Operating Permit late on 6 July 2006 with an expiration date of 3 April 2010. Per ADEM Rule 335-3-16-.12(2), an application for permit renewal shall be submitted at least six (6) months, but not more than eighteen (18) months, before the date of expiration of the permit. Based on this rule, the application for renewal was due to the Department no later than 3 October 2009, but no earlier than 3 October 2008. An application for permit renewal was received by the Department on 30 September 2009. Additional information was received on 7 October 2009. The proposed MSOP will expire in 2015.

Process Description

The process for the plant which will be covered by Major Source Operating Permit No. 503-4017 is described below.

The sour gas feed for the facility is produced and gathered from offshore gas wells located in the Fairway gas field [Facility No. 503-0016] and from other third party gas wells in various fields that are located in offshore Federal waters. Upon entering the facility, the field gas is separated from the liquids (i.e. condensate and water) in inlet high-pressure, three-phase (i.e. gas, crude oil or condensate, water) gas-liquid separator. The sour gas stream exiting the inlet high-pressure separator is sweetened as it passes through the high-pressure amine contactor which removes carbon dioxide and various sulfur compounds from the gas. The sweetened, high-pressure wet gas then goes through a glycol dehydration unit, which decreases the water content and/or the freezing temperature of the gas stream. This dried gas then enters a natural gas liquids [NGL] recovery unit that utilizes refrigeration cooling followed by separation to remove a liquid mix of ethane and heavier compounds. It should be noted that NGL recovery unit is currently out-of-service. A portion of the residue gas is utilized as high-pressure fuel for the facility while the remainder is sent to a pipeline for sales.

The rich amine solution, containing the absorbed acid gas and some co-absorbed hydrocarbons, leaving the high-pressure amine contactor is flashed to a lower pressure. The resulting flash gas and liquid phases are separated. The sour hydrocarbon-rich flash gas is combined with the stabilizer overhead sour gas and any sour gas stream from the condensate tank vapor recovery system and is fed to the low-pressure amine contactor where its acid gas components are removed. The resulting sweetened gas stream is utilized as low-pressure facility fuel. The rich solvent solutions from both amine contactors are combined, heated, and flashed to a lower pressure. The resulting flash is separated. The sour flash gas is fed to the heated flash amine contactor. The resulting overhead gas is routed to the Thermal Oxidizer for burning. The flashed rich solvent solutions from both amine contactors are combined with the rich solvent solution from the heated flash amine contactor and are regenerated in the amine regeneration column. The acid gas components plus some hydrocarbons are liberated from the solvent and delivered to the sulfur recovery system. The lean amine solution is recirculated through all three amine contactors.

Acid gas leaving the amine regeneration tower is sent through an acid gas enhancement unit, a three stage Claus sulfur recovery unit and a SCOT tail gas unit to convert the hydrogen sulfide into molten elemental sulfur. The tail gas leaving the SCOT tail gas unit is sent to the thermal oxidizer for burning.

The rich glycol solution from the glycol contactor is flashed to a lower pressure. The resulting gas and liquid is separated. The flashed liquid phase is then heated and routed to the glycol regeneration column. In the glycol regeneration column, the absorbed water is stripped from the glycol by further heating and natural gas stripping. A portion of the stripping gas comes from the above-mentioned flashed gas, while the remainder comes from the fuel gas. The water vapor and stripping gas exiting from the glycol regeneration column overhead is first cooled to condense as much of the water

as possible. The condensed water is separated and routed to the open drain sump for disposal. The remaining gas stream is compressed, cooled and routed to the fuel system or is used as makeup for stripping gas.

The condensate exiting the high-pressure separator is flashed to a lower pressure in the condensate flash tank prior to the liquid entering a stabilizer to lower the vapor pressure of the condensate stream. The liquids are then sent to storage while awaiting sales. Vapors from the condensate storage tanks are captured and compressed and routed along with sour gas from the condensate flash tank and the stabilizer overhead to the low-pressure amine contactor for sweetening and for use as low-pressure fuel.

Sour produced water from the inlet separator and the condensate flash tank is sent to the sour water stripper to remove carbon dioxide and various sulfur compounds. The sour vapors from the sour water stripper are routed to the low-pressure amine contactor for sweetening and for use as fuel. The sweetened water is sent to a gas blanketed storage tank prior to its being disposed of.

Heat is provided by two, 48.2 MMBtu/hour boilers and by a heat recovery system associated with the thermal oxidizer and turbine.

One 5,050 BHP, gas-fired turbine provides electrical power for facility.

An emergency gas flare is also located at this facility.

The following pages outline the regulations which apply to the various pieces of equipment that are considered part of this facility.

Utility Boilers

The primary heating units at this facility are two (2) 48.2 MMBTU/hr utility boilers. Each boiler burns only natural gas and is used to produce steam for use throughout the plant. Each boiler is subject to the following requirements:

Applicable Requirements

1. Each boiler is subject to the following emission limits: *Rule 335-3-14-.04(9)(b) [PSD]*
   (a) NO_X emissions shall not exceed 4.8 lb/hr
   (b) CO emissions shall not exceed 7.8 lb/hr
   (c) Fuel gas sulfur content ≤ 20 grains/100 Scf

   Expected emissions: CO = 1 Ton/Year/Boiler
   NO_X = 8 Ton/Year/Boiler
   H_2S Content < 10 ppmv

2. Each of these units is subject to all Title V source requirements. *Rule 335-3-16*
3. Each of these units is subject to the requirements of 40 CFR 60 Subpart D_c. *40 CFR 60.40c(a)*
4. Each of these units shall meet the requirements specified below: *Rule 335-3-4-.01(1)*
   (a) Except for one 6-minute period during any 60-minute period, these units shall not discharge into the atmosphere particulate that results in an opacity greater than 20%, as determined by a 6-minute average.
   (b) At no time shall these units discharge into the atmosphere particulate that results in an opacity greater than 40%, as determined by a 6-minute average.

Monitoring Approach

NO_X, CO, VOC, & SO_2 Monitoring
Periodic monitoring shall be utilized to assure compliance with the PSD NO_X and CO emission rate limits for each of these units. VOC and SO_2 emissions are minimized by burning sweetened natural gas as fuel.

The monitoring will consist of conducting a performance test once every five years utilizing reference methods. During these tests, the respective emission rates of each pollutant and emission factors of each pollutant will be measured.

Additionally, continuous fuel volume measurements and periodic determinations of hydrogen sulfide and fuel gas heat content will be maintained. The fuel gas heat content, emission factors, fuel volume used, and operating hours will be utilized in monthly calculations of pollutant emissions. The fuel volumes should be averaged

every one and three hours, and every month. See the following table for periodic monitoring methods and procedures.

NSPS D_c Monitoring

Since these units burn only natural gas, they are not subject to any of the emissions standards under this regulation. Therefore, per 40 CFR 60.48c(g)(2), monitoring for this regulation would consist of maintaining daily fuel usage records.

Compliance Assurance Monitoring [CAM]

For a unit to be subject to Compliance Assurance Monitoring (CAM), that unit must have a permit limit, a control device, and the potential to emit (PTE), pre-control, greater than 100 Ton/yr of any criteria pollutant or 10 Ton/yr of one Hazardous Air Pollutant (HAP) or 25 Ton/yr of all HAPs.

Each boiler is equipped with Low-NO_X Burners as its Best Available Control Technology [BACT] option under the Prevention of Significant Deterioration [PSD] regulations. Essentially, this control technology consists of using excessive air and fuel pre-mixed in a pre-combustion chamber. This chamber is designed to ensure complete mixing of the air and fuel prior to combustion. Per §64.1, a Control Device is defined as, "equipment, other than inherent process equipment, that is used to destroy or remove air pollutant(s) prior to discharge to the atmosphere", and "does not include passive control measures that act to prevent pollutants from forming, such as ... the use of combustion or other process design features or characteristics". Therefore, the Low-NO_X Burner technology does not meet the definition of a control device. Therefore, neither of these boilers is subject to CAM.

Other Monitoring

No monitoring is required for Particulates or for opacity since natural gas combustion results in negligible PM emissions and nearly zero percent opacity. However, any opacity readings may be taken with either Method 9 or Method 22.

Each 48.2 MMBTU/hr Utility Boiler

Monitoring approach:	*Periodic Monitoring*
I. Indicator	***Calculate NO_X & CO Emissions***
A. Measurement approach	Fuel gas volume to each unit shall be monitored with a system capable of measuring and recording the flow rate and/or the parameters utilized for flow rate calculation. BTU & H_2S content of fuel gas stream shall be determined annually, or at a frequency determined by the Department. Pollutant emission factors shall be determined during performance tests.
II. Indicator range	**CO emissions shall be maintained at < = 7.8 lb/hr** **NO_X emissions shall be maintained at < = 4.8 lb/hr** A deviation is defined as anytime the calculated emission rate exceeds the respective allowed emission rates. A deviation triggers an immediate inspection, corrective action, and reporting within 48 hours or two work days.
A QIP threshold	Not applicable
III. Performance criteria	
A. Data representiveness	Fuel gas volume monitor shall be located immediately upstream of each boiler, or at a common point upstream of both boilers. Fuel gas BTU & H_2S content shall be determined from samples that are representative of the fuel gas being consumed. Performance tests shall be undertaken while each boiler is being operated at normal loads.
B. Verification of operational status	Not applicable
C. QA/QC practices & criteria	The fuel gas volume monitor shall be calibrated at a frequency in accordance with the manufacturer's specifications, other written procedures that provide adequate assurance that the device is calibrated accurately, or at least annually whichever is more frequent. If the fuel gas monitor fails its calibration tests, the fuel gas monitor shall be taken out of service until repairs and/or replacements are made and a new calibration test is undertaken and passed.
D. Monitoring frequency	Fuel gas volume measured continuously. Fuel gas BTU & H_2S content shall be determined annually, or at a frequency set by the Department. Performance tests shall be undertaken every 5 years.

Data collection procedure	Calculate: Monthly, or as set by the Department, Pollutant emissions while utilizing the fuel volume, BTU content, emission factor and operating hours Fuel gas volume consumed Record: Monthly, or as set by the Department Fuel gas volume consumed Hours of operation. Pollutant emissions Record: Each occurrence Each fuel gas BTU & H_2S content determination Time, date and results of each inspection and corrective actions taken
Averaging period	Monthly, or as set by the Department

Simple Cycle Combustion Turbine [SCCT] Engine

The 5050 BHP SCCT engine is used to compress natural gas for transport down the pipeline. This unit is designed to fire sweetened natural gas. This unit is also equipped with water injection. This turbine engine is subject to the following requirements:

Applicable Requirements

1.	The turbine engines is subject to all Title V source requirements.	*Rule 335-3-16*
2.	Each of these engines shall meet the requirements specified below:	*Rule 335-3-4-.01(1)*
	(a) Except for one 6-minute period during any 60-minute period, the engine shall not discharge into the atmosphere particulate that results in an opacity greater than 20%, as determined by a 6-minute average.	
	(b) At no time shall the engine discharge into the atmosphere particulate that results in an opacity greater than 40%, as determined by a 6-minute average.	
3.	The turbine engine is subject to the requirements of 40 CFR 60, Subpart GG.	*§60.330(a)*
4.	The turbine engine shall meet the following limits:	
	(a) NO_X emissions shall not exceed 42 ppmvd in stack gases.	*Rule 335-3-14-.04(9)(b) (PSD) & §60.332*
	(b) CO emissions shall not exceed 4.7 lb/hr.	*Rule 335-3-14-.04(9)(b) (PSD)*
	(c) Fuel gas H2S content ≤ 10 grains/100 Scf.	*Rule 335-3-14-.04(9)(b) (PSD) & §60.333*

Expected emissions: CO = 15 Ton/yr
NO_X = 30.2 ppmvd [from May 2009 Test]
H_2S Content < 10 ppmvd

Monitoring Approach

NO_X, CO, VOC, & SO_2 Monitoring
Periodic monitoring shall be utilized to assure compliance with the PSD NO_X and CO emission rate limits for this unit. VOC and SO_2 emissions are minimized by burning sweetened natural gas as fuel.

The monitoring will consist of conducting a performance test once every five years utilizing reference methods. Additionally, each unit will be required to undergo a semi-annual test utilizing either reference methods or EPA's Conditional Test method No. 34 (CTM-034) on each of these engines. During

these tests, the respective emission rates of each pollutant and emission factors of each pollutant will be measured.

Additionally, continuous fuel volume measurements and periodic determinations of hydrogen sulfide and fuel gas heat content will be maintained. The fuel gas heat content, emission factors, fuel volume used, and operating hours will be utilized in monthly calculations of pollutant emissions. The fuel volumes should be averaged every one and three hours, and every month. See the following table for periodic monitoring methods and procedures.

NSPS GG Monitoring

The turbine has NO_X and Sulfur (elemental or SO_2) limits set by 40 CFR 60, Subpart GG. Per §60.332(c), the Subpart GG NO_X limit must be calculated utilizing the equation in §60.332(a)(2). The minimum limit set by NSPS GG is 150 ppmvd. However, since the PSD limit of 42 ppmvd is much more stringent than this equation, compliance with the PSD limit will satisfy the NSPS GG limit.

Monitoring requirements will be the same as those described above under Periodic Monitoring described above for NO_X, CO, VOC, and SO_2. Furthermore, the turbine will be restricted to burning sweetened natural gas as fuel.

Compliance Assurance Monitoring [CAM]

Usually, for a unit to be subject to Compliance Assurance Monitoring (CAM), that unit must have a permit limit, a control device, and the potential to emit (PTE), pre-control, greater than 100 Ton/yr of any criteria pollutant or 10 Ton/yr of one Hazardous Air Pollutant (HAP) or 25 Ton/yr of all HAPs.

The SCCT engine has the potential to emit greater than 100 Ton/yr of NO_X pre-control. Furthermore, the turbine is equipped with water injection, which qualifies as a control device in 40 CFR 64. Therefore, the turbine is subject to CAM. Monitoring will consist of maintaining a water-to-fuel ratio. See the following table for a more detailed outline of the required monitoring. The water-to-fuel ratios listed were derived from manufacturer specifications and empirical methods.

Other Monitoring

No monitoring is required for Particulates or for opacity since natural gas combustion results in negligible PM emissions and nearly zero percent opacity. However, any opacity readings may be taken with either Method 9 or Method 22.

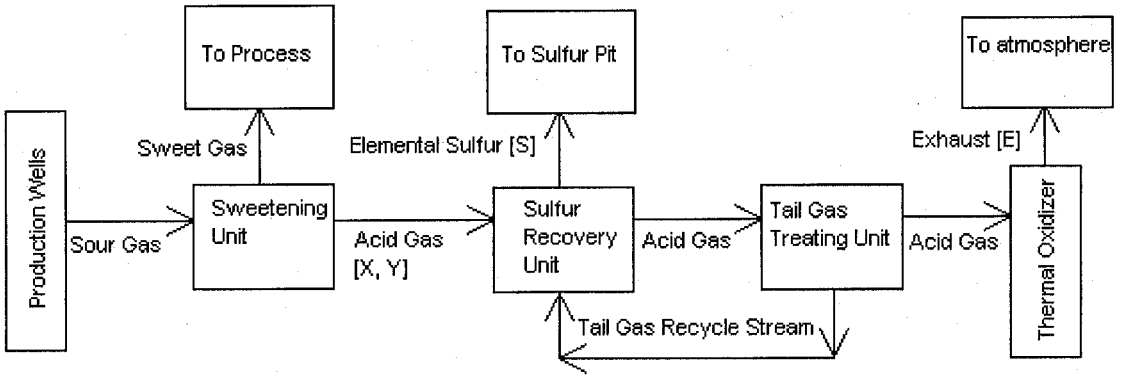
5,050 BHP SCCT Engine

Monitoring approach:	*Periodic monitoring*	*Compliance Assurance Monitoring [CAM]*
I. Indicator	**Calculated CO emissions & Measured NO_x emissions**	**Water to fuel weight ratio [WFR]**
A. Measurement approach	Fuel gas volume shall be monitored with a system capable of measuring and recording the flow rate and/or the parameters utilized for flow rate calculation. BTU & H_2S content of fuel gas stream shall be determined annually, or as set by the Department Pollutant emissions & CO emission factor shall be determined during performance and periodic tests.	Water injection and fuel consumption volumes shall be monitored with a system capable of measuring and recording the flow rate and/or the parameters utilized for flow rate calculation.
II. Indicator range	**CO emissions shall be maintained at <= 4.7 Lbs/Hr** **NO_x emissions shall be maintained at < = 42 ppmvd**	**@ Load = 1,800 kW WFR => 0.42** **@ Load = 2,200 kW WFR => 0.47** **@ Load = 2,900 kW WFR => 0.51** **@ Load = 3,180 kW WFR => 0.53** **@ Load = 3,300 kW WFR => 0.54**
	A deviation is defined as anytime the performance test, periodic test or the calculated emission rate exceeds the respective allowed emission rates.	A deviation is deemed to have occurred when the water to fuel ratio falls below the value noted in above table.
	A deviation triggers an immediate inspection, corrective action, and reporting within 48 hours or two work days.	A deviation triggers an immediate inspection and corrective actions that meet the requirements of 40 CFR Part 64.7(d) and reporting within 48 hours or two work days.
A QIP threshold	Not applicable	If the accumulated hours of deviation events occurring exceeds 5% of the SCCT engine operating time during any quarterly reporting period, a Quality Improvement Plan shall be developed and implemented.
III. Performance criteria		
A. Data representiveness	Fuel gas volume monitor shall be located immediately upstream of the engine. Fuel gas BTU & H_2S content shall be determined from samples that are representative of the fuel gas being consumed. Performance tests shall be undertaken while engine is being operated at normal loads.	Fuel gas and water injection volume monitor shall be located immediately upstream of the engine. Performance tests shall be undertaken while engine is being operated at normal loads.
B. Verification of operational status	Not applicable	Not applicable

C. QA/QC practices & criteria	Not applicable	A program for the water injection and fuel gas monitoring systems shall be developed and implemented that meets the requirements specified in the following regulations: 40 CFR 60 Subpart GG 40 CFR 60.13, Subpart A 40 CFR Part 60, App F 40 CFR Part 60, App B, PS 2 40 CFR Part 60, App B, PS 6 If a monitor fails its calibration tests, the monitor shall be taken out of service until repairs and/or replacements are made and a new calibration test is undertaken and passed.
D. Monitoring frequency	Fuel gas volume measured continuously. Fuel gas BTU & H_2S content shall be determined annually, or as set by the Department. Performance tests shall be undertaken once every five years. Periodic tests shall be undertaken once every six months, or as set by the Department.	Fuel gas and water injection volumes shall be measured continuously.
Data collection procedure	Calculate: Monthly CO emissions while utilizing the fuel volume, BTU content, emission factor and operating hours Fuel gas volume consumed Record: Monthly-CO emissions, Hours of operation, & Fuel gas volume consumed Record: Each occurrence Fuel gas BTU & H_2S content determination NO_X emissions during each periodic or performance test Time, date and results of each inspection and corrective actions taken	Record: Hourly and rolling three hour average water injection rates, Fuel gas consumption rates, & Calculated fuel gas to injected water weight ratios. Record: Each occurrence Time, date and results of each calibration. Time, date and results of each inspection and corrective actions taken
Averaging period	One month, or as set by the Department	Rolling three hour average

40 CFR 60 Subpart LLL [NSPS LLL]

This New Source Performance Standard [NSPS] applies to onshore gas processing facilities equipped with sweetening units, and sweetening units followed by Sulfur Recovery Units that commenced construction or modification after 20 January 1984 [§60.640(a), (c), & (d)]. The Yellowhammer Gas Plant is equipped with a sweetening unit followed by a Sulfur Recovery Unit, Tail Gas Treating Unit, and Thermal Oxidizer, as shown in the following simplified diagram:



Letters X, Y, S, and E retain the same definitions as those assigned in 40 CFR 60.641. Essentially, X is the Acid Gas Feedrate [Long Tons/Day] with H_2S concentration Y [mole percent on a dry basis], while S is the amount of solid sulfur produced [lb/hr], and E is the amount of sulfur compounds emitted [lb/hr] to atmosphere.

NSPS LLL contains minimum SO_2 reduction efficiency limits for the sulfur recovery equipment during compliance test, and during normal operation. These limits are determined [§60.642(a) and (b)] from Table Nos. 1 and 2 of the regulation, and are defined as Z_i [compliance test] and Z_c [continuous]. These limits are determined from formulas in Table Nos. 1 and 2. These formulas utilize the acid gas feedrate from the sweetening unit [X] being fed to the Sulfur Recovery Unit, and the H_2S concentration [Y] of the acid gas being fed to the Sulfur Recovery Unit. In preparing the initial application, dated December 1988 [Attachment No. 4], Shell based their calculations for this regulation on an acid gas feedrate [X] of 102.7 LTons/Day and an acid gas concentration [Y] of 43% H_2S. This means that Shell would be required to have a reduction efficiency [Z_i] of 97.2% during performance tests, and [Z_c] 95.7% during normal operation.

This facility is a 100-Ton PSD major source since it contains a sulfur plant, which is one of the 28 source categories. Therefore, as part of the Best Available Control Technology [BACT] analysis performed during the initial permitting, it was determined that the facility would be required to meet a 99.7% reduction efficiency [Z_i] during performance tests and a 99.4% reduction efficiency [Z_c]

during normal operation. Shell is allowed a margin of error of 0.3%, for each of these limits. This margin of error is to allow for fouling of the catalyst over time, fluctuations in feedrate, and other uncertainties, and is represented in equation form. Even with the margin of error, each of these limits is more stringent than those required by NSPS LLL, and will, therefore, satisfy NSPS LLL.

Compliance with this regulation is to be demonstrated by measuring the sulfur reduction efficiency [R_i] of the sulfur plant during compliance tests and during periods of normal operation [R_c]. Per 40 CFR 60.644(c)(1):

$R = (100 * S)/(S + E)$ [Variables are the same as defined in §60.641]

From the diagram above, the sulfur entering as Stream [X] exits into the Sulfur Pit [S] as a solid, and into the atmosphere [E] as sulfur compounds, primarily in the form of SO_2. The mass balance for these streams may be written as:

$X = S + E$

Substituting,

$R = [100 * (X - E)]/(X)$

This is the form of the equation in the current Title V permit. The facility currently has continuous monitors to measure and record the inlet acid gas feedrate [X], the H_2S content of the inlet acid gas feedrate [Y], and the exit SO_2 emission [E], as required by 40 CFR 60.646(a)(2)-(5). In addition, the accumulated sulfur production [S] is determined using calculations as allowed by 40 CFR 60.646(a)(1).

A second portion of NSPS LLL pertains to the Thermal Oxidizer exhaust. Per 40 CFR 60.646(b)(2), if compliance with the permit limits is achieved through an oxidation system followed by a combustor, and the oxidation efficiency is greater than, or equal to, 98%, then the exhaust sulfur emissions may assumed to be all SO_2. Monitoring would consist of establishing a minimum firebox temperature and operating the Thermal Oxidizer above this temperature at all times.

Per 40 CFR 60.644(c)(4)(i)-(iv), emission tests are to have eight runs of 20-minutes each. However, the current permit requires three runs of 1-hour each, utilizing the same methods and procedures outlined in §60.644(c)(4). Since the current permit's methods provide more data points and more accuracy, these methods are acceptable under the regulation.

Requirements for this regulation will be incorporated into the Sulfur Recovery System and Thermal Oxidizer section of the permit.

Sulfur Recovery System with Thermal Oxidizer

The Sulfur Recover System [SRS] is comprised of a Sulfur Recovery Unit [SRU], a Tail Gas Treating Unit [TGTU], and an Acid Gas Enrichment Unit. The Sulfur Recovery Unit converts a portion of the H_2S in the inlet Acid Gas Stream into

[redacted]

the H_2S concentration in the remaining Acid Gas is increased. This increased concentration ensures that the correct stoichiometry is present, such that complete conversion of H_2S to SO_2 occurs during combustion in the Thermal Oxidizer. The Tail Gas Treating Unit is used to remove any sulfur compounds, other than SO_2, from the waste gas stream before it is emitted to atmosphere. See the NSPS LLL section for a simplified diagram of this system. The following regulations apply:

Applicable Requirements

1. Each process gas stream containing more than 0.10 of a grain of hydrogen sulfide per Scf shall not be emitted into the atmosphere unless it is properly burned to maintain the ground level concentrations of hydrogen sulfide to less than twenty (20) parts per billion beyond plant property limits, averaged over a thirty (30) minute period. *Rule 335-3-5-.03(2)*

   Expected emissions: H_2S < or = 1 ppbv offsite

2. The Thermal Oxidizer shall meet the requirements *Rule 335-3-4-.01(1)*

(b)	Minimum sulfur recovery during normal operation => 99.7 – [17.91 / [Sulfur Feed Rate (LTons/Day)]]	*Rule 335-3-14-.04(9)(b) [PSD] & §60.642(b)*
(c)	CO <= 24.1 Lbs/Hour	*Rule 335-3-14-.04(9)(b) [PSD]*
(d)	NO_x <= 7.30 Lbs/Hour	*Rule 335-3-14-.04(9)(b) [PSD]*
(e)	SO_2 <= 64.80 Lbs/Hour	*Rule 335-3-14-.04(9)(b) [PSD]*
(f)	VOC <= 2.10 Lbs/Hour	*Rule 335-3-14-.04(9)(b) [PSD]*
(g)	TRS destruction => 98.0%	*§60.646(b)(2)*

Expected emissions:

CO = 5 Tons/Year
NO_x = 20 Tons/Year
SO_2 = 75 Tons/Year
VOC = 1 Tons/Year
TRS = 1 Tons/Year

Monitoring Approach

NSPS LLL Monitoring

Periodic monitoring for this regulation will be as discussed earlier in the NSPS LLL Section.

ADEM Rule 335-3-5-.03(2) Monitoring

Per ADEM Rule 335-3-5-.03(2), all process streams containing at least 0.10 grains H_2S [~162 ppmv] shall be burned such that the offsite H_2S concentration is 20 ppb or less, as averaged over a 30-minute period.

Offsite Concentration Periodic Monitoring

The requirement to maintain an off-site hydrogen sulfide concentration below a specific amount constitutes a facility wide emission cap and such limits are not considered to be an emission limitation that would trigger the applicability of Compliance Assurance Monitoring. Periodic Monitoring would consist of the same requirements as those outlined for NSPS LLL.

Burning Requirement Compliance Assurance Monitoring [CAM]

The requirement to burn the acid gas that is sent to the thermal oxidizer is considered to be a work practice and not an emission limitation. As defined in the CAM regulation, an emission limitation may be expressed in the form of a work practice, process parameter or other form of specific design. Thus CAM is applicable and shall be utilized to assure compliance with the requirement to burn the gases. The parameter chosen to indicate the gases are being burned shall be the thermal oxidizer firebox temperature that is required to attain the TRS destruction efficiency requirement.

NO_X, CO, VOC, & SO_2 Monitoring
Periodic monitoring shall be utilized to determine compliance with the NO_X, CO, VOC, and SO_2 limits. This monitoring method consists of conducting annual performance tests, and determining pollutant emission rates during the tests. Additional monitoring would be through the requirements of NSPS LLL.

Compliance Assurance Monitoring [CAM]
Compliance Assurance Monitoring [CAM] normally applies to process units that have the potential to emit at least 100 Ton/yr of any criteria pollutant, a permit limit, and a control device to meet this permit limit.

This gas treating and processing facility contains a gas sweetening unit followed by a sulfur recovery system (i.e. acid gas enhancement unit, sulfur recovery unit, tailgas treating unit) and a thermal oxidizer that controls the hydrogen sulfide and sulfur dioxide emissions from the facility. The potential pre-control device emissions of hydrogen sulfide and sulfur dioxide are expected to be greater than 100 tons/year threshold that triggers a CAM review. Thus CAM is applicable and shall be utilized to assure compliance with hydrogen sulfide and sulfur dioxide emission limits. Monitoring would consist of the same requirements as those outlined for NSPS LLL.

As discussed earlier, CAM also applies to the requirement to burn sulfur-laden gases. Monitoring would consist of maintaining the firebox temperature as discussed.

Opacity Monitoring
The facility will be required to perform a visible emissions observation on the Thermal Oxidizer only if visible emissions are noted.

See the following tables for CAM and periodic monitoring methods and procedures.

Sulfur Recovery System and Thermal Oxidizer

Monitoring approach:	*Compliance Assurance Monitoring [CAM]*	*Compliance Assurance Monitoring [CAM]*
I. Indicator	**Sulfur recovery efficiency & SO_2 emission rate**	**Thermal Oxidizer firebox temperature**
A. Measurement approach	Inlet feed volume and sulfur content shall be monitored with a system capable of continuously measuring and recording the flow rate and/or the parameters utilized for flow rate calculation along with its sulfur content. Inlet volume and mass rate shall be the accumulation of the following gas steams: Solution Still Reflux Accumulator Heated Amine Flash Gas Accumulator Effluent volume and sulfur content shall be monitored with a system capable of continuously measuring and recording the flow rate and/or the parameters utilized for flow rate calculation along with its sulfur dioxide content. Effluent volume and mass rate shall be the accumulation of the following gas steams: Thermal oxidizer	Firebox temperature shall be monitored with thermocouple or equivalent device.
	A continuous emissions monitoring system that is capable of assimilating the above inlet and effluent information, analyzing that information and making appropriate calculations for each monitoring cycle and each rolling three hour period while recording relevant information and calculation results shall be utilized.	A continuous emissions monitoring system that is capable of assimilating the above information, analyzing that information and making appropriate calculations for each monitoring cycle and each rolling three hour period while recording relevant information and calculation results shall be utilized.
II. Indicator range	**SO_2 emission shall be maintained at ≤ 64.8 Lbs/Hr** **Sulfur recovery efficiency % shall be maintained at between 99.7% and 99.4%, as determined by the following equation:** **% Eff = 99.7 – [17.91 / [Sulfur feed rate (LTons/Day)]]** An exceedance is defined as anytime the three hour rolling average SO_2 rate is > 64.8 Lbs/Hr or the three hour rolling average sulfur recovery efficiency is less than the value calculated while utilizing the above equation.	**Firebox temperature of shall be maintained at ≥ 1,400 °F** An excursion is defined as anytime the three hour rolling average firebox temperature is < 1,400 °F.

	An exceedance triggers an immediate inspection and corrective actions that meet the requirements of 40 CFR 64.7(d) and reporting within 48 hours or two work days.	An excursion triggers an immediate inspection and corrective actions that meet the requirements of 40 CFR 64.7(d) and reporting within 48 hours or two work days. The minimum firebox temperature may be modified upon receipt of Departmental approval.
A. QIP threshold	If the accumulated hours of exceedance events occurring exceeds 5% of the sulfur recovery system operating time during any quarterly reporting period, a Quality Improvement Plan shall be developed and implemented.	If the accumulated hours of excursion events occurring exceeds 5% of the sulfur recovery system operating time during any quarterly reporting period, a Quality Improvement Plan shall be developed and implemented.
III. Performance criteria		
A. Data representiveness	Each inlet sensor shall be located upstream of the sulfur recovery system at such a location that will allow the monitoring of all acid gas streams that enter the sulfur recovery system. Each effluent sensor shall be located at a point within the thermal oxidizer stack that would result in the monitoring of all of the gases exiting the sulfur recovery system through the thermal oxidizer stack.	Each temperature sensor shall be located within the thermal oxidizer combustion chamber or immediately downstream of the combustion chamber.
	Each volume sensor shall be accurate to within ±2.0%. Each content sensor shall be accurate to within ±5.0%.	Each temperature sensor shall be accurate to within ±1.0%.
B. Verification of operational status	Not applicable	Not applicable
C. QA/QC practices & criteria	A program for the inlet and effluent continuous emission monitoring system shall be developed and implemented that meets the requirements specified in the following regulations: 40 CF 60.13, Subpart A 40 CFR Part 60, App F 40 CFR Part 60, App B, PS 2 40 CFR Part 60, App B, PS 6	Each temperature sensor shall be calibrated at a frequency in accordance with the manufacturer's specifications or other written procedures that provide adequate assurance that the device is calibrated accurately or by methods and procedures approved by the Department.
	If the sensor fails its calibration test, the sensor shall be taken out of service until repairs and/or replacements are made and a new calibration test is undertaken and passed.	If the sensor fails its calibration test, the sensor shall be taken out of service until repairs and/or replacements are made and a New calibration test is undertaken and passed.

Sulfur Recovery System and Thermal Oxidizer [Continued]

Monitoring approach:	*Compliance Assurance Monitoring [CAM]*	*Compliance Assurance Monitoring [CAM]*
I. Indicator	**Sulfur recovery efficiency & SO_2 emission rate**	**Thermal Oxidizer firebox temperature**
D. Monitoring frequency	Inlet volume or inlet volume parameters and inlet content shall be measured continuously. Effluent volume or effluent volume parameters and effluent content shall be measured continuously.	Firebox temperature shall be measured continuously.
Data collection procedure	Calculate and record hourly and rolling three hour averages of the following items: Volumes & sulfur mass rates of: Inlet streams & H_2S concentration analyses Thermal oxidizer effluent Allowed sulfur recovery efficiency Actual sulfur recovery efficiency Produced Sulfur Record calibration results, inspection results and corrective actions taken.	Record hourly and rolling three hour average firebox temperature. Record calibration results, inspection results and corrective actions taken.
Averaging period	Rolling three hours	Rolling three hours

NOTE: Monitoring outlined in this table was derived from the requirements of 40 CFR 60 Subpart LLL. Therefore, compliance with the requirements in this table satisfies the requirements of 40 CFR 60 Subpart LLL.

Sulfur Recovery System and Thermal Oxidizer - Opacity

Monitoring approach:	*Periodic Monitoring*
I. Indicator	**Opacity**
A. Measurement approach	Provided the thermal oxidizer is being operated and facility operating personnel notice visible emissions being emitted from the thermal oxidizer, a daily visual emission observation on the thermal oxidizer shall be undertaken. Duration of each observation shall be >= 15 minutes and<= 60 minutes Each observation shall be conducted with either: Test Method 9 of 40 CFR Part 60 – OR – Test Method 22 of 40 CFR Part 60
II. Indicator range	**(1) No more than one 6-min. average opacity reading shall exceed 20%; OR, (2) No 6-min. average opacity reading shall exceed 40%; OR, (3) The accumulated time of observed visible emissions shall not exceed 12 minutes.** A deviation is defined as anytime the observed 6-minute average opacity exceeds 20% for the 2nd time, or 40% for the 1st time, when utilizing Method 9. A deviation is defined as anytime the accumulated time in which visible emissions were observed exceeds 12 minutes per observation when utilizing Method 22. A deviation triggers continued visible emissions observations at a frequency suitable to defining the duration of the visible emission deviation event. One observation shall be undertaken to establish the end of the visible emission deviation event. A deviation triggers an immediate inspection, corrective action, and reporting within 48 hours or two work days.
III. Performance criteria	
A. Monitoring frequency	Daily
Data collection procedure	Record: Daily Each 15 second observation reading Record: Each occurrence – Time, date and results of corrective actions taken
Averaging period	Six minutes

40 CFR 63 Subpart HH [MACT HH]

This regulation applies to Oil and Gas Production facilities, and contains requirements for both major and area sources of hazardous air pollutants. Since this facility is a minor source of HAPs, the major source portion of this regulation is not applicable.

The area source portion of this regulation applies to Tri-Ethylene Glycol [TEG] dehydrators located at oil and gas production sites [§63.760(a) and (b)(2)]. This plant is equipped with a TEG unit.

Per 40 CFR 63.764(e)(1)(ii), "the owner or operator is exempt from the requirements of paragraphs (c)(1) and (d) of this section if...the actual average emissions from the glycol dehydration unit process vent to the atmosphere are less than 0.90 megagram per year, as determined by the procedures specified in §63.772(b)(2) of this subpart".

From 40 CFR 63.761, a *glycol dehydration unit process vent* is defined as the glycol dehydration reboiler vent and the vent from the [Gas-Condensate-Glycol] separator. Additionally, a *glycol dehydration unit reboiler vent* is the vent through which exhaust from the reboiler of a glycol dehydration unit passes from the reboiler to the atmosphere or to a control device, and a *GCG Separator* is a flash separator or flash tank.

Shell has requested that a federally-enforceable limit of 0.90 Mg/yr of benzene be applied to this plant. Compliance with this limit was demonstrated by utilizing a GRI-GlyCALC simulation, as allowed by 40 CFR 63.772(b)(2)(i). Results of this simulation show that the plant should produce about 0.599 Ton/yr of benzene.

Therefore, the TEG is exempt from this regulation. Requirements for demonstrating this exemption will be incorporated into the Flare section.

40 CFR 60 Subpart KKK [NSPS KKK]

This Subpart has requirements for all equipment at an onshore natural gas processing plants in wet gas service, located at natural gas processing facilities constructed, reconstructed, or modified after 20 January 1984 [40 CFR 60.630(a)(1) and (b)]. Basically, all affected equipment is subject to the standards of 40 CFR 60 Subpart VV, and referred to as a Leak Detection and Repair program [LDAR]. This facility is subject to this regulation.

Compressors

Per 40 CFR 60.630(a)(2), all compressors are subject to control and monitoring requirements. However, per 40 CFR 60.633(f), reciprocating compressors in wet gas service are exempt from compressor control requirements. Thus, the inlet compressors are exempt from the control requirements of this regulation. Refrigeration compressors are subject to both the control requirements and the monitoring requirements. These control requirement options consist of the compressor design, or capturing the off-gases from the compressor and routing them to a flare or other combustion device.

Shell is routing these gases to the flare. Thus, the flare is subject to design and operational requirements stated in 40 CFR 60.18 [§60.633(g)]. This includes the requirement to operate the flare with no visible emissions, except for five minutes, during a continuous two hour period. This requirement will be implemented into the flare section.

Other Equipment

Per 40 CFR 60.630(a)(3), all equipment in Volatile Organic Compound [VOC] service is subject to the monitoring requirements of the regulation. Per 40 CFR 60.631, "equipment" means flanges, valves, piping, ductwork, pressure relief devices, pumps, open-ended lines, open-ended valves, and/or other connectors in VOC or wet gas service. Per 40 CFR 60.481, "in VOC service" is defined to mean that the stream is at least 10% VOC by weight. Methods and procedures for determining VOC content are stated in 40 CFR 60.485(d); allowed substitutions may be found in §60.632(f).

The monitoring requirement for these components consists of checking them periodically for leaks, utilizing procedures laid out in 40 CFR 60.485, except as allowed by 40 CFR 60.633(h). Each component's section under NSPS VV specifies the required monitoring frequency, although most components' frequency begins at monthly.

Shell is required to submit Semi-Annual monitoring reports for this regulation.

Plant Emergency Flare

The emergency flare is used to incinerate excess inlet sour gas, excess process gas, and/or acid gas when the Sulfur Recovery System and Thermal Oxidizer is down for repairs. The flare may also used to burn excess VOCs from the TEG, as well as from equipment subject to NSPS KKK. The flare should meet the following requirements:

Applicable Requirements

1.	The flare is subject to all Title V source requirements.	*Rule 335-3-16*
2.	Each process gas stream containing more than 0.10 of a grain of hydrogen sulfide per Scf shall not be emitted into the atmosphere unless it is properly burned to maintain the ground level concentrations of hydrogen sulfide to less than twenty (20) parts per billion beyond plant property limits, averaged over a thirty (30) minute period.	*Rule 335-3-5-.03(2)*
3.	No person shall cause or permit the Sulfur Oxide emissions from any facility designed to dispose of or process natural gas or refinery gas containing more than 10 grains of Hydrogen Sulfide per standard cubic foot.	*Rule 335-3-5-.03(3)*

Expected emissions: $H_2S \leq 1$ ppbv offsite
$SO_2 < 6$ Ton/yr [2008 Title V Emissions Estimates]

4.	Since the flare may be used to comply with the requirements of 40 CFR 60, Subpart KKK, they shall be operated with no visible emissions, as demonstrated by the methods outlined in §60.18(f), except for a 5-minute period during any consecutive 2-hour period.	*§60.18(a), §60.18(c)(1), & §60.633(g)*
5.	Benzene Emissions from the TEG shall not exceed 0.9 Mg/yr.	*§63.764(e)(1)(ii) & §63.772(b)(2)*

Monitoring Approach

Subpart HH Periodic Monitoring [HAPs]
In order to demonstrate that the TEG is meeting the federally-enforceable limit of 0.9 Mg/yr of benzene, Shell will be required to perform an annual analysis of the gas entering the TEG per §63.772(b)(2). Also, Shell will be required to keep a copy of the actual average benzene emissions onsite [§63.774(d)(1)(ii)]. A copy of the annual emissions should be submitted to the Department with the annual Title V emissions estimates.

ADEM Rule 335-3-5-.03(2) Monitoring
Per ADEM Rule 335-3-5-.03(2), all process streams containing at least 0.10 grains H_2S [~162 ppmv] shall be burned such that the offsite H_2S concentration is 20 ppb or less, as averaged over a 30-minute period.

Offsite Concentration Periodic Monitoring
The requirement to maintain an off-site hydrogen sulfide concentration below a specific amount constitutes a facility wide emission cap and such limits are not considered to be an emission limitation that would trigger the applicability of Compliance Assurance Monitoring. Thus, periodic monitoring is applicable.

The periodic monitoring parameter chosen to indicate the off site hydrogen sulfide concentrations are being met shall be the acid gas to assist gas ratio. This indicator limit is based on engineering experience and air quality modeling of larger sources. Provided the ratio exceeds one, the Department shall require air quality modeling of this facility to be undertaken to determine if off site hydrogen sulfide concentration limits were exceeded and/or to establish a new higher indicator limit.

Burning Requirement Compliance Assurance Monitoring [CAM]
The requirement to burn sulfur-laden gas in the flare is considered to be a work practice and not an emission limitation. As defined in the CAM regulation, an emission limitation may be expressed in the form of a work practice, process parameter or other form of specific design. Thus CAM is applicable and shall be utilized to assure compliance with the requirement to burn the gases. The parameter chosen to indicate the gases are being burned shall be the presence of a spark or pilot light at the flare tip. See the following table for CAM methods and procedures.

SO_2 Periodic Monitoring
Periodic monitoring for this pollutant will consist of monitoring the acid gas to assist gas ratio and maintaining a continuous spark at the flare tip, as discussed earlier.

NO_X, CO, & VOC Periodic Monitoring
The flares have no limit for these pollutants, so no specific monitoring is required for these pollutants.

Opacity Monitoring
Periodic monitoring for the opacity standard will be required on during flaring events as described in the following table.

Emergency Flare

Monitoring approach:	*Periodic Monitoring*	*Compliance Assurance Monitoring [CAM]*
I. Indicator	**Assist gas to acid gas volume ratio**	**Operate flare with a flame or spark present at all times when a process gas stream may be sent to it.**
A. Measurement approach	Inlet assist gas and acid gas feed volume shall be monitored with a system capable of measuring and recording the flow rate and/or the parameters utilized for flow rate calculation or estimated utilizing material balances, computer simulations, special testing, or other approved methods.	The flare tip shall be equipped either with a continuous sparking flame igniter that is monitored by an amp meter–OR– an equivalent device –OR– visual observation –OR– with a continuously burning pilot light that is monitored with either a thermocouple or an equivalent device or by visual observation.
II. Indicator range	**Acid gas to assist gas volume ratio shall be maintained at <= 1.0**	**Presence of a flame or spark at flare tip**
	A deviation is defined as anytime the actual ratio exceeds 1.0	A deviation is defined as when there was no spark or flame present at the flare tip when a process gas stream could be vented to it.
	If the accumulated hours of deviation events occurring exceeds 5% of the emergency flare's operating time during a semi-annual reporting period an immediate running of an air quality modeling study that utilizes the maximum inlet mass and flow rates that occurred during this period. The minimum ratio may be modified upon receipt of Departmental approval.	A deviation triggers an immediate inspection and corrective actions that meet the requirements of 40 CFR Part 64.7(d) and reporting within 48 hours or two work days.
A QIP threshold	Not applicable	If the accumulated hours of deviation events occurring exceeds 5% of the flare's operating time during any quarterly reporting period, a Quality Improvement Plan shall be developed and implemented.
III. Performance criteria		
A. Data representiveness	Each volume monitor shall be located upstream of the flare and shall consist of a single device that monitors all streams or multiple devices that monitor individual or multiple streams.	Each flame igniter or flame monitor shall be located at the flare tip and focused on the area where gas exits the flare tip. Visual observations shall be made from the location that provides the best view of the flare tip and/or flare pilot lights or flare igniter.
B. Verification of operational status	Not applicable	Not applicable

C. QA/QC practices & criteria	Each volume monitor shall be maintained and calibrated in accordance with the manufacturer's specifications.	Each flame igniter or flame monitor shall be maintained and calibrated in accordance with the manufacturer's specifications, other written procedures that provide adequate assurance that the device is properly maintained and calibrated accurately, –OR– at least annually, whichever is more frequent. Repairs and/or replacements shall be made immediately when non-functioning or damaged parts are found. Flame igniter arc length shall not exceed 10% of arc interval and shall have an arcing frequency of no greater than once every 3 seconds.
D. Monitoring frequency	Inlet acid gas and assist volume shall be measured continuously.	Pilot flame shall be monitored either continuously with a thermocouple or daily with visual inspections if operating staff is on site. Flame igniter - arcing frequency shall be monitored either continuous with an amp meter or daily with visual inspections if operating staff is on site.
Data collection procedure	Calculate &/or record an inlet volume that is representative of the volume entering flare. Record daily hours of operation. Calculate & record H_2S feed rate. Record time, date and results of each calibration. Record time, date and results of each inspection and corrective actions taken. Submit air quality modeling results to the Department within 60 days of the end of the semi-annual period.	Record time, date and duration of each incident of when no spark or flame was present at the flare tip when a process gas stream could have been sent to it. Record time, date and results of each visual observation. Record time, date and results of each calibration. Record time, date and results of each inspection and corrective actions taken.
Averaging period	Monthly	Instantaneous

Flare - Opacity

Monitoring approach:	*Periodic Monitoring*
I. Indicator	**Opacity**
A. Measurement approach	Provided the flare is being utilized to burn a gas stream other than the pilot light fuel gas stream, a daily visual emission observation on the flare shall be undertaken. Duration of each observation shall be: >= 15 minutes and <= 120 minutes Each observation shall be conducted in accordance with either: Test Method 9 of 40 CFR Part 60 Or Test Method 22 of 40 CFR Part 60
II. Indicator range	**The accumulated time of opacity observance shall not exceed 5 minutes.** A deviation is defined as anytime the accumulated time exceeds 5 minutes during any observation while utilizing 22. A deviation triggers continued visible emissions observations at a frequency suitable to defining the duration of the visible emission deviation event. One observation shall be undertaken to establish the end of the visible emission deviation event. A deviation triggers an iinmediate inspection, corrective action, and reporting within 48 hours or two work days.
III. Performance criteria	
A. Monitoring frequency	Daily
Data collection procedure	Record: Daily Each 15 second observation reading Record: Each occurrence Time, date and results of corrective actions taken
Averaging period	Instantaneous

Appendix A: Draft Permit

ADEM
Alabama Department of Environmental Management

MAJOR SOURCE OPERATING PERMIT

Permitee: **Shell Exploration & Production Co.**

Facility Name: **Yellowhammer Gas Treating & Processing Facility**

Facility No.: 503-4017

Location: 13700 Dauphin Island Parkway; Mobile Co., Coden, AL

In accordance with and subject to the provisions of the Alabama Air Pollution Control Act of 1971, as amended, Ala. Code 1975, §§22-28-1 to 22-28-23 (2006 Rplc. Vol.) (the "AAPCA") and the Alabama Environmental Management Act, as amended, Ala. Code 1975, §§22-22A-1 to 22-22A-15, (2006 Rplc. Vol.) and rules and regulations adopted thereunder, and subject further to the conditions set forth in this permit, the Permittee is hereby authorized to construct, install and use the equipment, device or other article described above.

*Pursuant to the **Clean Air Act of 1990**, all conditions of this permit are federally enforceable by EPA, the Alabama Department of Environmental Management, and citizens in general. Those provisions which are not required under the **Clean Air Act of 1990** are considered to be state permit provisions and are not federally enforceable by EPA and citizens in general. Those provisions are contained in separate sections of this permit.*

Issuance Date: *DRAFT*
Effective Date: *DRAFT*
Expiration Date: *April 3, 2015*

Table of Contents

Table of Contents

General Permit Provisos

Federally Enforceable Provisos	Regulations
1. Transfer	
This permit is not transferable, whether by operation of law or otherwise, either from one location to another, from one piece of equipment to another, or from one person to another, except as provided in Rule 335-3-16-.13(1)(a)5.	Rule 335-3-16-.02(6)
2. Renewals	
An application for permit renewal shall be submitted at least six (6) months, but not more than eighteen (18) months, before the date of expiration of this permit. The source for which this permit is issued shall lose its right to operate upon the expiration of this permit unless a timely and complete renewal application has been submitted within the time constraints listed in the previous paragraph.	Rule 335-3-16-.12(2)
3. Severability Clause	
The provisions of this permit are declared to be severable and if any section, paragraph, subparagraph, subdivision, clause, or phrase of this permit shall be adjudged to be invalid or unconstitutional by any court of competent jurisdiction, the judgment shall not affect, impair, or invalidate the remainder of this permit, but shall be confined in its operation to the section, paragraph, subparagraph, subdivision, clause, or phrase of this permit that shall be directly involved in the controversy in which such judgment shall have been rendered.	Rule 335-3-16-.05(e)
4. Compliance	
(a) The permittee shall comply with all conditions of ADEM Admin. Code 335-3. Noncompliance with this permit will constitute a violation of the Clean Air Act of 1990 and ADEM Admin. Code 335-3 and may result in an enforcement action; including but not limited to, permit termination, revocation and reissuance, or modification; or denial of a permit renewal application by the permittee.	Rule 335-3-16-.05(f)
(b) The permittee shall not use as a defense in an enforcement action that maintaining compliance with conditions of this permit would have required halting or reducing the permitted activity.	Rule 335-3-16-.05(g)

General Permit Provisos

Federally Enforceable Provisos	Regulations
5. Termination for Cause This permit may be modified, revoked, reopened, and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance will not stay any permit condition.	Rule 335-3-16-.05(h)
6. Property Rights The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege.	Rule 335-3-16-.05(i)
7. Submission of Information The permittee must submit to the Department, within 30 days or for such other reasonable time as the Department may set, any information that the Department may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. Upon receiving a specific request, the permittee shall also furnish to the Department copies of records required to be kept by this permit.	Rule 335-3-16-.05(j)
8. Economic Incentives, Marketable Permits, and Emissions Trading No permit revision shall be required, under any approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes that are provided for in this permit.	Rule 335-3-16-.05(k)
9. Certification of Truth, Accuracy, and Completeness: Any application form, report, test data, monitoring data, or compliance certification submitted pursuant to this permit shall contain certification by a responsible official of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.	Rule 335-3-16-.07(a)

Federally Enforceable Provisos	Regulations
10. Inspection and Entry	
Upon presentation of credentials and other documents as may be required by law, the permittee shall allow authorized representatives of the Alabama Department of Environmental Management and EPA to conduct the following:	Rule 335-3-16-.07(b)
(a) Enter upon the permittee's premises where a source is located or emissions-related activity is conducted, or where records must be kept pursuant to the conditions of this permit;	
(b) Review and/or copy, at reasonable times, any records that must be kept pursuant to the conditions of this permit;	
(c) Inspect, at reasonable times, this facility's equipment (including monitoring equipment and air pollution control equipment), practices, or operations regulated or required pursuant to this permit;	
(d) Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with this permit or other applicable requirements.	
11. Compliance Provisions	
(a) The permittee shall continue to comply with the applicable requirements with which the company has certified that it is already in compliance.	Rule 335-3-16-.07(c)
(b) The permittee shall comply in a timely manner with applicable requirements that become effective during the term of this permit.	
12. Compliance Certification	
On, or before, June 3 of each year, a compliance certification shall be submitted.	Rule 335-3-16-.07(e)
(a) The compliance certification shall include the following:	
(1) The identification of each term or condition of this permit that is the basis of the certification;	
(2) The compliance status;	

Federally Enforceable Provisos	Regulations

(3) The method(s) used for determining the compliance status of the source, currently and over the reporting period consistent with Rule 335-3-16-.05(c) (Monitoring and Recordkeeping Requirements);

(4) Whether compliance has been continuous or intermittent;

(5) Such other facts as the Department may require to determine the compliance status of the source;

(b) The compliance certification shall be submitted to:

Alabama Department of Environmental Management
Air Division
P.O. Box 301463
Montgomery, AL 36130-1463
and to:

Air and EPCRA Enforcement Branch
EPA Region IV
61 Forsyth Street, SW
Atlanta, GA 30303

13. Reopening for Cause

Under any of the following circumstances, this permit will be reopened prior to the expiration of the permit: Rule 335-3-16-.13(5)

(a) Additional applicable requirements under the Clean Air Act of 1990 become applicable to the permittee with a remaining permit term of three (3) or more years. Such a reopening shall be completed not later than eighteen (18) months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which this permit is due to expire.

(b) Additional requirements (including excess emissions requirements) become applicable to an affected source under the acid rain program. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into this permit.

Federally Enforceable Provisos	Regulations
(c) The Department or EPA determines that this permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of this permit.	
(d) The Administrator or the Department determines that this permit must be revised or revoked to assure compliance with the applicable requirements.	
14. Additional Rules and Regulations	
This permit is issued on the basis of Rules and Regulations existing on the date of issuance. In the event additional Rules and Regulations are adopted, it shall be the permit holder's responsibility to comply with such rules.	§22-28-16(d), Code of Alabama 1975, as amended
15. Equipment Maintenance or Breakdown	
(a) In the case of shutdown of air pollution control equipment (which operates pursuant to any permit issued by the Director) for necessary scheduled maintenance, the intent to shut down such equipment shall be reported to the Director at least twenty-four (24) hours prior to the planned shutdown, unless such shutdown is accompanied by the shutdown of the source which such equipment is intended to control. Such prior notice shall include, but is not limited to the following:	Rule 335-3-1-.07(1) & Rule 335-3-1-.07(2)
(1) Identification of the specific facility to be taken out of service as well as its location and permit number;	
(2) The expected length of time that the air pollution control equipment will be out of service;	
(3) The nature and quantity of emissions of air contaminants likely to occur during the shutdown period;	
(4) Measures such as the use of off-shift labor and equipment that will be taken to minimize the length of the shutdown period;	
(5) The reasons that it would be impossible or impractical to shut down the source operation during the maintenance period.	

Federally Enforceable Provisos	Regulations
(b) In the event that there is a breakdown of equipment or upset of process in such a manner as to cause, or is expected to cause, increased emissions of air contaminants which are above an applicable standard, the person responsible for such equipment shall notify the Director within 24 hours or the next working day and provide a statement giving all pertinent facts, including the estimated duration of the breakdown. The Director shall be notified when the breakdown has been corrected.	
16. Operation of Capture and Control Devices	
All air pollution control devices and capture systems for which this permit is issued shall be maintained and operated at all times in a manner so as to minimize the emissions of air contaminants. Procedures for ensuring that the above equipment is properly operated and maintained so as to minimize the emission of air contaminants shall be established.	§22-28-16(d), Code of Alabama 1975, as amended
17. Obnoxious Odors	
This permit is issued with the condition that, should obnoxious odors arising from the plant operations be verified by Air Division inspectors, measures to abate the odorous emissions shall be taken upon a determination by the Alabama Department of Environmental Management that these measures are technically and economically feasible.	Rule 335-3-1-.08
18. Fugitive Dust	
(a) Precautions shall be taken to prevent fugitive dust emanating from plant roads, grounds, stockpiles, screens, dryers, hoppers, ductwork, etc.	Rule 335-3-4-.02
(b) Plant or haul roads and grounds will be maintained in the following manner so that dust will not become airborne. A minimum of one, or a combination, of the following methods shall be utilized to minimize airborne dust from plant or haul roads and grounds:	
(1) By the application of water any time the surface of the road is sufficiently dry to allow the creation of dust emissions by the act of wind or vehicular traffic;	
(2) By reducing the speed of vehicular traffic to a point below that at which dust emissions are created;	

Federally Enforceable Provisos	Regulations
(3) By paving; (4) By the application of binders to the road surface at any time the road surface is found to allow the creation of dust emissions; Should one, or a combination, of the above methods fail to adequately reduce airborne dust from plant or haul roads and grounds, alternative methods shall be employed, either exclusively or in combination with one or all of the above control techniques, so that dust will not become airborne. Alternative methods shall be approved by the Department prior to utilization.	
19. Additions and Revisions Any modifications to this source shall comply with the modification procedures in Rules 335-3-16-.13 or 335-3-16-.14.	Rule 335-3-16-.13 & Rule 335-3-16-.13.14
20. Recordkeeping Requirements (a) Records of required monitoring information of the source shall include the following: (1) The date, place, and time of all sampling or measurements; (2) The date analyses were performed; (3) The company or entity that performed the analyses; (4) The analytical techniques or methods used; (5) The results of all analyses; and (6) The operating conditions that existed at the time of sampling or measurement. (b) Retention of records of all required monitoring data and support information of the source for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation and copies of all reports required by the permit	Rule 335-3-16-.05(c)(2)

Federally Enforceable Provisos	Regulations
21. Reporting Requirements	
(a) Reports to the Department of any required monitoring shall be submitted at least every 6 months. All instances of deviations from permit requirements must be clearly identified in said reports. All required reports must be certified by a responsible official consistent with Rule 335-3-16-.04(9).	Rule 335-3-16-.05(c)(3).
(b) Deviations from permit requirements shall be reported within 48 hours or 2 working day of such deviations, including those attributable to upset conditions as defined in the permit. The report will include the probable cause of said deviations, and any corrective actions or preventive measures that were taken.	
22. Emission Testing Requirements	
Each point of emission which requires testing will be provided with sampling ports, ladders, platforms, and other safety equipment to facilitate testing performed in accordance with procedures established by Part 60 of Title 40 of the Code of Federal Regulations, as the same may be amended or revised.	Rule 335-3-1-.05(3) & Rule 335-3-1-.04(1)
The Air Division must be notified in writing at least 10 days in advance of all emission tests to be conducted and submitted as proof of compliance with the Department's air pollution control rules and regulations.	
To avoid problems concerning testing methods and procedures, the following shall be included with the notification letter:	
(1) The date the test crew is expected to arrive, the date and time anticipated of the start of the first run, how many and which sources are to be tested, and the names of the persons and/or testing company that will conduct the tests.	Rule 335-3-1-.04
(2) A complete description of each sampling train to be used, including type of media used in determining gas stream components, type of probe lining, type of filter media, and probe cleaning method and solvent to be used (if test procedures require probe cleaning).	
(3) A description of the process(es) to be tested including the feed rate, any operating parameters used to control or influence the operations, and the rated capacity.	

Federally Enforceable Provisos	Regulations
(4) A sketch or sketches showing sampling point locations and their relative positions to the nearest upstream and downstream gas flow disturbances.	
A pretest meeting may be held at the request of the source owner or the Air Division. The necessity for such a meeting and the required attendees will be determined on a case-by-case basis.	Rule 335-3-1-.04
All test reports must be submitted to the Air Division within 30 days of the actual completion of the test unless an extension of time is specifically approved by the Air Division.	
23. Payment of Emission Fees	
Annual emission fees shall be remitted each year according to the fee schedule in ADEM Admin. Code R. 335-1-7-.04.	Rule 335-1-7-.04
24. Other Reporting and Testing Requirements	
Submission of other reports regarding monitoring records, fuel analyses, operating rates, and equipment malfunctions may be required as authorized in the Department's air pollution control rules and regulations. The Department may require emission testing at any time.	Rule 335-3-1-.04(1)
25. Title VI Requirements (Refrigerants)	
Any facility having appliances or refrigeration equipment, including air conditioning equipment, which use Class I or Class II ozone-depleting substances as listed in 40 CFR Part 82, Subpart A, Appendices A and B, shall service, repair, and maintain such equipment according to the work practices, personnel certification requirements, and certified recycling and recovery equipment specified in 40 CFR Part 82, Subpart F.	40 CFR Part 82
No person shall knowingly vent or otherwise release any Class I or Class II substance into the environment during the repair, servicing, maintenance, or disposal of any device except as provided in 40 CFR Part 82, Subpart F.	
The responsible official shall comply with all reporting and recordkeeping requirements of 40 CFR 82.166. Reports shall be submitted to the US EPA and the Department as required.	

Federally Enforceable Provisos	Regulations
26. Chemical Accidental Prevention Provisions If a chemical listed in Table 1 of 40 CFR Part 68.130 is present in a process in quantities greater than the threshold quantity listed in Table 1, then: (a) The owner or operator shall comply with the provisions in 40 CFR Part 68. (b) The owner or operator shall submit one of the following: (1) A compliance schedule for meeting the requirements of 40 CFR Part 68 by the date provided in 40 CFR Part 68 § 68.10(a) or, (2) A certification statement that the source is in compliance with all requirements of 40 CFR Part 68, including the registration and submission of the Risk Management Plan.	40 CFR Part 68
27. Display of Permit This permit shall be kept under file or on display at all times at the site where the facility for which the permit is issued is located and will be made readily available for inspection by any or all persons who may request to see it.	Rule 335-3-14-.01(1)(d)
28. Circumvention No person shall cause or permit the installation or use of any device or any means which, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes any emission of air contaminant which would otherwise violate the Division 3 rules and regulations.	Rule 335-3-1-.10
29. Visible Emissions Unless otherwise specified in the Unit Specific provisos of this permit, any source of particulate emissions shall not discharge more than one 6-minute average opacity greater than 20% in any 60-minute period. At no time shall any source discharge a 6-minute average opacity of particulate emissions greater than 40%. Opacity will be determined by 40 CFR Part 60, Appendix A, Method 9, unless otherwise specified in the Unit Specific provisos of this permit.	Rule 335-3-4-.01(1)

Federally Enforceable Provisos	Regulations
30. Fuel-Burning Equipment	
(a) Unless otherwise specified in the Unit Specific provisos of this permit, no fuel-burning equipment may discharge particulate emissions in excess of the emissions specified in Part 335-3-4-.03.	Rule 335-3-4-.03
(b) Unless otherwise specified in the Unit Specific provisos of this permit, no fuel-burning equipment may discharge sulfur dioxide emissions in excess of the emissions specified in Part 335-3-5-.01.	Rule 335-3-5-.01
31. Process Industries – General	
Unless otherwise specified in the Unit Specific provisos of this permit, no process may discharge particulate emissions in excess of the emissions specified in Part 335-3-4-.04.	Rule 335-3-4-.04
32. Averaging Time for Emission Limits	
Unless otherwise specified in the permit, the averaging time for the emission limits listed in this permit shall be the nominal time required by the specific test method.	Rule 335-3-1-.05
33. Compliance Assurance Monitoring (CAM)	
Conditions (a) through (d) that follow are general conditions applicable to emissions units that are subject to the CAM requirements. Specific requirements related to each emissions unit are contained in the unit specific provisos and the attached CAM appendices.	
(a) Operation of Approved Monitoring	§64.7
(1) *Commencement of operation.* The owner or operator shall conduct the monitoring required under this section and detailed in the unit specific provisos and CAM appendix of this permit (if required) upon issuance of the permit, or by such later date specified in the permit pursuant to §64.6(d).	
(2) *Proper maintenance.* At all times, the owner or operator shall maintain the monitoring, including but not limited to, maintaining necessary parts for routine repairs of the monitoring equipment.	

Federally Enforceable Provisos	Regulations
(3) *Continued operation.* Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments), the owner or operator shall conduct all monitoring in continuous operation (or shall collect data at all required intervals) at all times that the pollutant-specific emissions unit is operating. Data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities shall not be used for purposes of this part, including data averages and calculations, or fulfilling a minimum data availability requirement, if applicable. The owner or operator shall use all the data collected during all other periods in assessing the operation of the control device and associated control system. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions.	
(4) *Response to excursions or exceedances.* (a) Upon detecting an excursion or exceedance, the owner or operator shall restore operation of the pollutant-specific emissions unit (including the control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. The response shall include minimizing the period of any startup, shutdown or malfunction and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup or shutdown conditions). Such actions may include initial inspection and evaluation, recording that operations returned to normal without operator action (such as through response by a computerized distribution control system), or any necessary follow-up actions to return operation to within the indicator range, designated condition, or below the applicable emission limitation or standard, as applicable.	

Federally Enforceable Provisos	Regulations
(b) Determination of whether the owner or operator has used acceptable procedures in response to an excursion or exceedance will be based on information available, which may include but is not limited to, monitoring results, review of operation and maintenance procedures and records, and inspection of the control device, associated capture system, and the process.	
(5) *Documentation of need for improved monitoring.* After approval of monitoring under this part, if the owner or operator identifies a failure to achieve compliance with an emission limitation or standard for which the approved monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing indicator ranges or designated conditions, the owner or operator shall promptly notify the Department and, if necessary, submit a proposed modification to the permit to address the necessary monitoring changes. Such a modification may include, but is not limited to, reestablishing indicator ranges or designated conditions, modifying the frequency of conducting monitoring and collecting data, or the monitoring of additional parameters.	
(b) Quality Improvement Plan (QIP) Requirements	§64.8
(1) Based on the results of a determination made under Section 33(a)(4)(b) above, the Administrator or the permitting authority may require the owner or operator to develop and implement a QIP. Consistent with 40 CFR §64.6(c)(3), the permit may specify an appropriate threshold, such as an accumulation of exceedances or excursions exceeding 5 percent duration of a pollutant-specific emissions unit's operating time for a reporting period, for requiring the implementation of a QIP. The threshold may be set at a higher or lower percent or may rely on other criteria for purposes of indicating whether a pollutant-specific emissions unit is being maintained and operated in a manner consistent with good air pollution control practices.	
(2) Elements of a QIP:	

Federally Enforceable Provisos	Regulations

(i) The owner or operator shall maintain a written QIP, if required, and have it available for inspection.

(ii) The plan initially shall include procedures for evaluating the control performance problems and, based on the results of the evaluation procedures, the owner or operator shall modify the plan to include procedures for conducting one or more of the following actions, as appropriate:

(I) Improved preventive maintenance practices.

(II) Process operation changes.

(III) Appropriate improvements to control methods.

(IV) Other steps appropriate to correct control performance.

(V) More frequent or improved monitoring (only in conjunction with one or more steps under paragraphs (2)(b)(i) through (iv) above).

(3) If a QIP is required, the owner or operator shall develop and implement a QIP as expeditiously as practicable and shall notify the Department if the period for completing the improvements contained in the QIP exceeds 180 days from the date on which the need to implement the QIP was determined.

(4) Following implementation of a QIP, upon any subsequent determination pursuant to Section 33(a)(4)(b) above, the Department may require that an owner or operator make reasonable changes to the QIP if the QIP is found to have:

(i) Failed to address the cause of the control device performance problems; or

Federally Enforceable Provisos	Regulations
(ii) Failed to provide adequate procedures for correcting control device performance problems as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.	
(5) Implementation of a QIP shall not excuse the owner or operator of a source from compliance with any existing emission limitation or standard, or any existing monitoring, testing, reporting or recordkeeping requirement that may apply under federal, state, or local law, or any other applicable requirements under the Act.	
(c) Reporting and Recordkeeping Requirements	§64.9
(1) General reporting requirements	
(i) On and after the date specified in Section 33(a)(1) above by which the owner or operator must use monitoring that meets the requirements of this part, the owner or operator shall submit monitoring reports to the permitting authority in accordance with ADEM Admin. Code R. 335-3-16-.05(c)3.	
(ii) A report for monitoring under this part shall include, at a minimum, the information required under ADEM Admin. Code R. 335-3-16-.05(c)3. and the following information, as applicable:	
(I) Summary information on the number, duration and cause (including unknown cause, if applicable) of excursions or exceedances, as applicable, and the corrective actions taken;	
(II) Summary information on the number, duration and cause (including unknown cause, if applicable) for monitor downtime incidents (other than downtime associated with zero and span or other daily calibration checks, if applicable); and	

Federally Enforceable Provisos	Regulations

(III) A description of the actions taken to implement a QIP during the reporting period as specified in Section 33(b) above. Upon completion of a QIP, the owner or operator shall include in the next summary report documentation that the implementation of the plan has been completed and reduced the likelihood of similar levels of excursions or exceedances occurring.

(2) General recordkeeping requirements.

(i) The owner or operator shall comply with the recordkeeping requirements specified in ADEM Admin. Code R. 335-3-16-.05(c)2.. The owner or operator shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan required pursuant to Section 33(b) above and any activities undertaken to implement a quality improvement plan, and other supporting information required to be maintained under this part (such as data used to document the adequacy of monitoring, or records of monitoring maintenance or corrective actions).

(ii) Instead of paper records, the owner or operator may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements.

Federally Enforceable Provisos	Regulations
(d) Savings Provisions	§64.10
(1) Nothing in this part shall:	
(i) Excuse the owner or operator of a source from compliance with any existing emission limitation or standard, or any existing monitoring, testing, reporting or recordkeeping requirement that may apply under federal, state, or local law, or any other applicable requirements under the Act. The requirements of this part shall not be used to justify the approval of monitoring less stringent than the monitoring which is required under separate legal authority and are not intended to establish minimum requirements for the purpose of determining the monitoring to be imposed under separate authority under the Act, including monitoring in permits issued pursuant to title I of the Act. The purpose of this part is to require, as part of the issuance of a permit under title V of the Act, improved or new monitoring at those emissions units where monitoring requirements do not exist or are inadequate to meet the requirements of this part.	
(ii) Restrict or abrogate the authority of the Department to impose additional or more stringent monitoring, recordkeeping, testing, or reporting requirements on any owner or operator of a source under any provision of the Act, including but not limited to sections 114(a)(1) and 504(b), or state law, as applicable.	
(iii) Restrict or abrogate the authority of the Department to take any enforcement action under the Act for any violation of an applicable requirement or of any person to take action under section 304 of the Act.	

Federally Enforceable Provisos	Regulations
34. Permit Shield A permit shield exists under this operating permit in accordance with ADEM Admin. Code 335-3-16-.10 in that compliance with the conditions of this permit shall be deemed in compliance with any applicable requirements as of the date of permit issuance. The permit shield is based on the accuracy of the information supplied in the application for this permit. Under this shield, it has been determined that requirements listed as non-applicable in the application are not applicable to this source.	Rule 335-3-16-.10

Summary Page for Utility Boilers

Permitted Operating Schedule: **24** Hours/Day x **365** Days/Year = **8760** Hours/Year

Emission limitations:

Emission Point #	Description	Pollutant	Emission Limit	Regulation
PB-701-A	48.2 MMBtu/Hour, gas fired boiler	CO	7.8 Lbs/Hr	335-3-14-.04(9)(b)
		NO_X	4.8 Lbs/Hr	335-3-14-.04(9)(b)
		VOC	None	
		SO_2	None	
		Fuel H_2S	20 grains/100 SCF Or 320 ppmv	335-3-14-.04(9)(b)
		Opacity	No more than one 6 min avg> 20% Or	Rule 335-3-.04(1)(a)
			No 6 min avg. > 40%	Rule 335-3-.04(1)(b)
PB-701-B	48.2 MMBtu/Hour, gas fired boiler	CO	7.8 Lbs/Hr	335-3-14-.04(9)(b)
		NO_X	4.8 Lbs/Hr	335-3-14-.04(9)(b)
		VOC	None	
		SO_2	None	
		Fuel H_2S	20 grains/100 SCF Or 320 ppmv	335-3-14-.04(9)(b)
		Opacity	No more than one 6 min avg> 20% Or	Rule 335-3-.04(1)(a)
			No 6 min avg. > 40%	Rule 335-3-.04(1)(b)

Provisos for Utility Boilers

Federally Enforceable Provisos	Regulations
Applicability	
1. Each 48.2 MMBtu/Hour boilers shall be subject to the requirements specified in Rule 335-3-16 the Alabama Department of Environmental Management Administrative Code and to this subpart of this permit.	Rule 335-3-16-.03
2. Each 48.2 MMBtu/Hour boilers shall be subject to the requirements specified in 40 CFR Part 60, Subpart D_c and to this subpart of this permit.	Rule 335-10-.02(2)(c) 40 CFR 60.40c(a)
3. Each 48.2 MMBtu/Hour boilers shall be subject to the requirements specified in the Prevention of Significant Deterioration regulations and to this subpart of this permit.	Rule 335-3-14-.04(8)(a) & (b)
Emissions Standards	
1. Each boiler shall comply with the requirements specified in proviso 1(a) through (e) of this section of this subpart.	Rule 335-3-14-.04(9)(b)
(a) Carbon monoxide (CO) emissions shall not exceed 7.8 Lbs/Hour.	
(b) Nitrogen oxide (NO_X) emissions shall not exceed 4.8 Lbs/Hour.	
(c) Hydrogen sulfide content of the fuel gas shall not exceed 20 grain/100 Scf (i.e. 320 ppmv).	
(d) Each boiler shall be equipped with low NO_X burners.	
2. Each engine shall meet the requirements specified in 2(a) and (b) of this section of this subpart.	
(a) Except for one 6-minute period during any 60-minute period, the engine shall not discharge into the atmosphere particulate that results in an opacity greater than 20%, as determined by a 6-minute average.	Rule 335-3-4-.01(1)(a)
(b) At no time shall the engine discharge into the atmosphere particulate that results in an opacity greater than 40%, as determined by a 6-minute average.	Rule 335-3-4-.01(1)(b)

Provisos for Utility Boilers

Federally Enforceable Provisos	Regulations
Compliance and Performance Test Methods and Procedures	
1. Provided a performance test has not been conducted on the boiler in the last five (5) years, a performance test shall be conducted in accordance to the requirements specified in proviso 1(a)(1) through (3) of this section of this subpart.	Rule 335-3-16-.05(c)(1)(i)
(a) A test shall consist of three runs of at least 1-hour in duration each that meets the requirements specified in proviso 1(a)(1) through (3) of this section of this subpart.	
(1) Each run shall test for the emissions of CO and NO_X.	
(2) Each run shall be conducted in accordance to the appropriate reference methods and procedures specified in proviso 1(a)(2)(i) through (vii) of this section of this subpart.	
(i) 40 CFR Part 60 Appendix A, Method 1 or 1A	
(ii) 40 CFR Part 60 Appendix A, Method 2 or 2A or 2B or 2C or 2D or 2E	
(iii) 40 CFR Part 60 Appendix A, Method 3 or 3A or 3B or 3C	
(iv) 40 CFR Part 60 Appendix A, Method 4	
(v) 40 CFR Part 60 Appendix A, Method 7 or 7A or 7B or 7C or 7D or 7E	
(vi) 40 CFR Part 60 Appendix A, Method 10 or 10A or 10B	
(vii) 40 CFR Part 60 Appendix A, Method 19	
(3) The pollutants tested for and the methods and procedures that are utilized may be modified upon receiving Departmental approval.	
(b) Emission factors for each air pollutant shall be determined in pounds per million BTU. [Test (Lbs/MMBtu)]	

Provisos for Utility Boilers

Federally Enforceable Provisos	Regulations
2. The fuel gas shall be tested for BTU and hydrogen sulfide content in accordance to the requirements specified in proviso 2(a) through (d) of this section of this subpart.	Rule 335-3-16-.05(c)(1)(i)
(a) BTU and sulfur content testing shall consist of capturing a representative sample of the fuel gas at a frequency of no less than once each twelve (12) months.	
(b) The sample shall be analyzed for its BTU content by utilizing the ASTM Analysis Method D1826-77 or equivalent method. [Fuel Gas Btu/Scf]	
(c) The sample shall be analyzed for its hydrogen sulfide content by utilizing the Tutwiler procedures found in §60.648 of 40 CFR Part 60 or the chromatographic analysis procedures found in ASTM E-260 or the stain tube procedures found in GPA 2377-86 or those provided by the stain tube manufacture. [Fuel Gas (H_2S ppmv)]	
(d) The frequency of analysis may be modified upon receiving Departmental approval.	
3. Compliance with the opacity requirements specified in proviso 2 of the *emission standards* section of this subpart of this permit shall be performed as needed utilizing either Method 9 or Method 22 of 40 CFR 60, Appendix A.	
Emission Monitoring	
1. A monitoring system that meets the requirements specified in Appendix A of this permit shall be utilized.	Rule 335-3-16-.05(c)(1)
Record Keeping and Reporting Requirements	
1. A record of the information specified in provisos 1(a) through (h) of this section of this subpart shall be maintained and made available for inspection.	Rule 335-3-16-.05(c)(2)
(a) The date, starting time and duration of each deviation from the requirements specified in this subpart along with the cause and corrective actions taken.	
(b) Date and type of boiler maintenance that affects air emissions	

Provisos for Utility Boilers

Federally Enforceable Provisos	Regulations

(c) Fuel gas BTU content

[Fuel Gas (BTU/Scf/)]

(d) Fuel gas hydrogen sulfide content

[Fuel Gas (H_2S Mole %)]

(e) Fuel gas consumption of engine

[Boiler Fuel Gas (MScf/Month)]

(f) MMBtu of fuel gas consumption of boiler

$$\text{Boiler Fuel Gas (MMBtu/Month)} = \frac{[\text{Boiler Fuel Gas (MScf/Month)}] \text{ X } [\text{Fuel Gas (Btu/Scf)}]}{1000}$$

Where Fuel Gas [Btu/Scf] shall equal to the most recent Btu content analysis required by proviso 2 of the *Compliance and Performance Test Methods and Procedures* section of this subpart.

(g) Operating hours of boiler

[Operating Hours/Month/Boiler]

(h) CO and NO_X emissions shall be determined as specified in proviso 2(g)(1) and (2) of this section of this subpart.

(1) Boiler (Lbs/Month) =

[Boiler Fuel Gas (MMBtu/Month)] X
[Test (Lbs/MMBtu)]

Where Test (Lbs/MMBtu) shall equal to the most recent performance results required by proviso 1 of the *Compliance and Performance Test Methods and Procedures* section of this subpart.

(2) Boiler (Lbs/Hour) =

$$\frac{[\text{Boiler (Lbs/Month)}]}{[\text{Boiler Operating Hours/Month}]}$$

2. Periodic Monitoring Reports meeting the requirements specified in provisos 2(a) through (c) of this section of this subpart shall be submitted to the Department.

Rule 335-3-16-.05(c)(2)
Rule 335-3-16-.05(c)(3)(i)

Provisos for Utility Boilers

Federally Enforceable Provisos	Regulations

(a) Each report shall identify each incidence of deviation from a permit term or condition including those that occur during startups, shutdowns, and malfunctions.

(1) A deviation shall mean any instance in which emission limits, emission standards, and/or work practices were not complied with, as indicated by observations, data collection, and monitoring specified in this permit. Some examples of deviations are:

(i) There was an exceedance of the pollutant emission rates specified in proviso 1 of the *Emissions Standards* section of this subpart.

(ii) There was an exceedance of the opacity limits specified in proviso 2 of the *Emission Standards* section of this subpart of this permit, when utilizing Method 9.

(iii) Visible emissions observations were not conducted for the required 12 minute duration when utilizing Method 22.

(iv) Fuel gas with a hydrogen sulfide content of greater than 20 grains/100 Scf was burned in these units.

(v) The boilers were not tested, were not tested at the required frequency, and/or were not tested with the methods specified.

(vi) Required monitoring was not conducted according to the specified monitoring plans.

(vii) Records were not kept appropriately.

(viii) Reports were not submitted appropriately.

(ix) There was a failure to take immediate corrective actions when a deviation was determined to have occurred.

Federally Enforceable Provisos	Regulations

(2) For each deviation event, the following information shall be submitted.

(i) Emission source description

(ii) Permit requirement

(iii) Date

(iv) Starting time

(v) Duration

(vi) Actual quantity of pollutant or parameter

(vii) Cause

(viii) Actions taken to return to normal operating conditions

(ix) Total operating hours of the affected source during the reporting period

(x) Total hours of deviation events during the reporting period

(xi) Total hours of deviation events that occurred during start ups, shut downs, and malfunctions during the reporting period

(b) If no deviation event occurred during the reporting period, a statement that indicates there were no deviations from the permit requirements shall be included in the report.

(c) Each report shall cover a calendar semi-annual period and shall be submitted within thirty days of the end of each calendar semi-annual period.

(d) The report content specified in proviso 2(b) of this section may be modified upon receipt of Departmental approval.

Provisos for Utility Boilers

Federally Enforceable Provisos	Regulations
3. Each deviation from the requirements specified in this subpart, including those that occur during startups, shutdowns, and malfunctions, shall be reported to the Department in a manner that complies with proviso 15(b) and 21(b) of the general proviso subpart of this permit.	Rule 335-3-16-.05(c)(2) Rule 335-3-16-.05(c)(3)(ii)
4. The recordkeeping and reporting requirements specified in §60.7 and §60.19 of 40 CFR Part 60, Subpart A, and §60.48c of 40 CFR Part 60, Subpart Dc, shall be maintained.	40 CFR 60.7 40 CFR 60.19 40 CFR 60.48c

Summary Page for 5050 BHP Simple Cycle Combustion Turbine Engine

Permitted Operating Schedule: **24** Hours/Day x **365** Days/Year = **8760** Hours/Year

Emission limitations:

Emission Point #	Description	Pollutant	Emission Limit	Regulation
TB-100	5050 BHP, SCCT, Gas Fired Engine	CO	4.7 Lbs/Hr	335-3-14-.04(9)(b)
		NO_X	42 ppmv @ 15% O_2	335-3-14-.04(9)(b) §60.332(a)
		VOC	None	
		SO_2	None	
		Fuel Gas H_2S	10 grains/100 SCF Or 160 ppmv	335-3-14-.04(9)(b) §60.333
		Opacity	No more than one 6 min avg> 20%	Rule 335-3-.04(1)(a)
			Or	
			No 6 min avg. > 40%	Rule 335-3-.04(1)(b)

Provisos for 5050 BHP SCCT Engine

Federally Enforceable Provisos	Regulations
Applicability	
1. The 5050 BHP SCCT engine shall be subject to the requirements specified in Rule 335-3-16 of the Alabama Department of Environmental Management Administrative Code and to this subpart of this permit.	Rule 335-3-16-.03
2. The 5,050 BHP SCCT engine shall be subject to the 40 CFR Part 64 as indicated in proviso 33 of the *General Permit Provisos* subpart and to this subpart of this permit.	Rule 335-3-16-.05(c)(1)(i)
3. The 5050 BHP SCCT engine shall be subject to the requirements of 40 CFR 60, Subpart GG and to this subpart of this permit.	§60.330
4. The 5050 BHP SCCT engine shall be subject to the requirements specified in the Prevention of Significant Deterioration regulations and to this subpart of this permit.	Rule 335-3-14-.04(8)(a) & (b)
5. Since the NO_X emission limit on the 5050 SCCT engine set by Prevention of Significant Deterioration [PSD] is more stringent that that set by 40 CFR 60 Subpart GG, then the PSD limit shall satisfy both regulations.	Rule 335-3-14-.04(9)(b) & §60.10(a)
Emissions Standards	
1. The 5050 BHP SCCT engine shall comply with the requirements specified in proviso 1(a) through (e) of this section of this subpart.	Rule 335-3-14-.04(9(b)
(a) Carbon monoxide (CO) emissions shall not exceed 4.7 Lbs/Hour.	
(b) Nitrogen oxide (NO_X) emissions shall not exceed 42 ppmvd at 15% O_2.	40 CFR 60.332(c)
(c) Hydrogen sulfide content of the fuel gas shall not exceed 10 grain/100 SCF (i.e. 160 ppmv).	40 CFR 60.333
(d) At all times, the SCCT engine shall be operated with water being injected into the fuel gas prior to its being burned in the combustion chamber of the engine.	40 CFR 60.334(a) & 40 CFR 60.334(g)

Provisos for 5050 BHP SCCT Engine

Federally Enforceable Provisos	Regulations
(1) The minimum water to fuel weight ratio shall be determined to be that which occurred during the latest performance test which showed compliance with proviso 1(a) and (b) of this section.	
(2) The water injection system shall be maintained and operated in a manner that minimizes the emissions of regulated air pollutants.	
2. The SCCT engine shall meet the requirements specified in 2(a) and (b) of this section of this subpart.	Rule 335-3-4-.01(1)
(a) Except for one 6-minute period during any 60-minute period, the unit shall not discharge into the atmosphere particulate that results in an opacity greater than 20%, as determined by a 6-minute average.	
(b) At no time shall the unit discharge into the atmosphere particulate that results in an opacity greater than 40%, as determined by a 6-minute average.	
Compliance and Performance Test Methods and Procedures	
1. The requirements specified in proviso 1(a) through (d) of this section shall be complied with for each engine:	
(a) Provided a performance test has not been conducted on the engine in the last five (5) years, a performance test shall be conducted in accordance to the requirements specified in proviso 1(a)(1) and (2) of this section.	Rule 335-3-16-.05(c)(1)(i)
(1) A test shall consist of three runs of at least 1-hour in duration each that meets the requirements specified in proviso 1(a)(1)(i) and (ii) of this section of this subpart.	
(i) Each run shall test for the emissions of CO and NO_X.	
(ii) Each run shall be conducted in accordance to the appropriate reference methods and procedures specified in proviso 2 of this section of this subpart.	

Provisos for 5050 BHP SCCT Engine

Federally Enforceable Provisos	Regulations
(b) When appropriate, a performance test shall be conducted on each engine within six months of commencing or re-commencing operation.	
(c) Except as provided for in proviso 1(c)(1) of this section of this permit, a periodic test shall be conducted on the engine in accordance with the requirements specified in proviso 1(c)(2) and (3) of this section of this subpart.	Rule 335-3-16-.05(c)(1)(i)
(1) A periodic test is not required if one of the following conditions occurs during the period denoted in either proviso 1(c)(2)(i) or 2(ii) of this section of this subpart.	
(i) Provided the performance test required by proviso 1(a) of this section of this subpart has been undertaken on the unit during the last twelve (12) months.	
(ii) Provided the engine's accumulated operating time does not exceed 500 hours during the last twelve (12) months.	
(2) The maximum interval in which to conduct a periodic test shall not exceed a six (6) month period in time.	
(i) Provided at least four (4) consecutive periodic tests have been conducted, the maximum interval may be modified to not exceed a twelve (12) month period upon receipt of Departmental approval.	
(ii) Once a deviation from the requirements specified in proviso 1 of the *emission standards* section of this subpart has occurred, the maximum interval shall revert back to the requirements specified in proviso 2(i) of this section of this subpart.	
(3) Each test shall consist of one run of one hour in duration that complies with the requirements specified proviso 1(b)(3)(i) and (ii) of this section of this subpart.	

Provisos for 5050 BHP SCCT Engine

Federally Enforceable Provisos	Regulations
(i) Each run shall test for emissions of CO and NO_X.	
(ii) Each run shall be conducted in accordance to the methods and procedures specified in proviso 1(b)(3)(ii)(I) and (II) of this section of this subpart	
(I) EPA's "Conditional Test Method (CTM-034)"	
(II) 40 CFR Part 60 Appendix A, Method 19	
(d) The pollutants tested for and the methods and procedures that are utilized may be modified upon receiving Departmental approval.	
2. The requirements specified in paragraph 2(a) and (b) of this section of this subpart of this permit shall be utilized according to the frequency outlined in proviso 1 of this section of this subpart of this permit:	Rule 335-3-16-.05(c)(1)(i), Rule 335-3-1-.05, & 40 CFR 60.8
(a) NO_X testing for each engine shall follow these requirements:	
(1) One of the following methods shall be selected:	
(i) 40 CFR 60 Appendix A, Method 7E, and 40 CFR 60 Appendix A, Method 3 (or Method 3A),	40 CFR 60.335(a)(1)
OR	
(ii) 40 CFR 60 Appendix A, Method 20,	40 CFR 60.335(a)(2)
OR	
(iii) ASTM D6522-00 as incorporated in 40 CFR 60.17.	40 CFR 60.335(a)(3)
(2) Sampling points shall be determined per §60.335(a)(4)	40 CFR 60.335(a)(4)
(3) Modifications to the procedures in provisos 2(a)(1)(i) through (iii) of this section of this subpart of this permit shall be in accordance with §60.335(a)(5)	40 CFR 60.335(a)(5)

Provisos for 5050 BHP SCCT Engine

Federally Enforceable Provisos	Regulations
(4) Compliance with the limit set in §60.332(a)(2) and §60.332(c) shall be determined utilizing the methods and procedures outlined in §60.335(b).	40 CFR 60.335(b)
(b) CO testing for each engine shall follow the requirements specified in either paragraph 2(b)(1), (2), (3) or (4) this section.	
(1) 40 CFR 60 Appendix A, Method 10, OR	
(2) 40 CFR 60 Appendix A, Method 10A, OR	
(3) 40 CFR 60 Appendix A, Method 10B, OR	
(4) Other methodology approved by the Department.	
3. The use of Method ASTM D6522-00, as incorporated in §60.17, shall also satisfy the CO testing requirement since this method is designed to measure both pollutants.	40 CFR 60.17(a)(84)
4. The following requirements shall apply to the range of minimum water-to-fuel weight ratios:	40 CFR 60.334(g) 40 CFR 60.335(b)(4)
(a) The minimum water-to-fuel weight ratio shall be determined for each run of each periodic or performance test performed per proviso 1 of this section of this subpart of this permit.	
(b) The range of minimum water-to-fuel ratios shall be the average of the water-to-fuel weight ratios determined per proviso 4(a) of this section of this subpart of this permit.	
(c) The range of minimum water-to fuel weight ratios may be modified upon receipt of Department approval.	
5. The fuel gas shall be tested for BTU and sulfur content in accordance to the requirements specified in proviso 5(a) through (d) of this section of this subpart.	Rule 335-3-16-.05(c)(1)(i), Rule 335-3-1-.05, 40 CFR 60.334(h)(1) & (3), 40 CFR 60.334(i)(2) & (3), & 40 CFR 60.335(b)(10)

Provisos for 5050 BHP SCCT Engine

Federally Enforceable Provisos	Regulations
(a) BTU and sulfur content testing shall consist of capturing a representative sample of the exhaust stack gases at a frequency of no less than once each twelve (12) months.	
(b) The sample shall be analyzed for its BTU content by utilizing the ASTM Analysis Method D1826-77 or equivalent method. [Fuel Gas BTU/Scf]	
(c) The sample shall be analyzed for its sulfur content by utilizing ASTM Analysis Method D1072-80 or ASTM Analysis Method D 3031-81 or ASTM Analysis Method D 4084-82 or ASTM Analysis Method D 3246-81 or chromatographic analysis or equivalent method. [Fuel Gas (Sulfur Wt %)]	
(d) The frequency of analysis may be modified upon receiving Departmental approval.	
6. Compliance with the opacity requirements specified in proviso 2 of the *emission standards* section of this subpart of this permit shall be performed as needed utilizing either Method 9 or Method 22 of 40 CFR 60, Appendix A.	
Emission Monitoring	
1. A monitoring system that meets the requirements specified in Appendix B of this permit shall be utilized.	Rule 335-3-16-.05(c)(1), 40 CFR 64.6(b) & (c), & 40 CFR 60.334
2. When possible and practicable, a continuous metering system shall be utilized that is capable of continuously monitoring and recording the fuel gas flow rate to each engine.	Rule 335-3-1-.05 & 40 CFR 60.334(h)(4)
(a) The continuous measurement may be made with a single meter through which all of the fuel gas for identical make and model engines flow.	
(i) Calibration, maintenance and operation of metering system shall be performed in accordance to manufacturer's specification.	

Provisos for 5050 BHP SCCT Engine

Federally Enforceable Provisos	Regulations
(b) Volumetric flow of fuel gas streams that are not continuously measured shall be accounted for by utilizing special estimating methods (i.e. engineer estimates, material balance, computer simulation, special testing etc.).	
Record Keeping and Reporting Requirements	
1. A record of the information specified in provisos 1(a) through (l) of this section of this subpart shall be maintained and made available for inspection.	Rule 335-3-16-.05(c)(2) 40 CFR 64.9
(a) The date, starting time and duration of each deviation from the requirements specified in this subpart along with the cause and corrective actions taken.	
(b) The date, time and results of each performance and periodic tests along with any other tests conducted on the engine that provides additional stack pollutant content data.	
(c) The date and time of each shut down and start up of the SCCT engine and the water injection system	40 CFR 60.334(j)(1)
(d) Date and type of engine maintenance that affects air emissions	
(e) The average hourly water-to-fuel weight ratio CMS calculations and analysis	40 CFR 60.334(g) 40 CFR 60.335(b)(4)
(f) Hourly water to fuel weight ratio	40 CFR 60.334(g) 40 CFR 60.335(b)(4)
(g) Fuel gas BTU content [Fuel Gas (BTU/Scf/)]	40 CFR 60.633(h) & (i)
(h) Fuel gas Sulfur content [Fuel Gas (Sulfur Wt%)]	40 CFR 60.633(h) & (i)
(i) Fuel gas consumption of engine [Engine Fuel Gas (MScf/Month)]	
(j) MMBTU of fuel gas consumption of engine Engine Fuel Gas (MMBTU/Month) = $\frac{[\text{Engine Fuel Gas (MScf/Month)}] \times [\text{Fuel Gas (BTU/Scf)}]}{1000}$	

Provisos for 5050 BHP SCCT Engine

Federally Enforceable Provisos	Regulations
Where Fuel Gas [BTU/Scf] shall equal to the most recent BTU content analysis required by proviso 5 of the *Compliance and Performance Test Methods and Procedures* section of this subpart.	
(k) Operating hours of engine [Operating Hours/Month/Engine]	
(l) CO emissions shall be determined as specified in proviso 1(l)(1) and (2) of this section of this subpart.	
(1) Engine (Lbs/Month) = [Engine Fuel Gas (MMBTU/Month)] X [Test (Lbs/MMBTU)] Where Test (Lbs/MMBTU) shall equal to the most recent performance or periodic test results required by proviso 1 of the *Compliance and Performance Test Methods and Procedures* section of this subpart.	
(2) Engine (Lbs/Hour) = [Engine (Lbs/Month)] [Engine Operating Hours/Month]	
2. Periodic Monitoring Reports and Excess Emissions Reports meeting the requirements specified in proviso 2(a) through (c) of this section of this subpart shall be submitted to the Department.	Rule 335-3-16-.05(c)(2) & Rule 335-3-16-.05(c)(3)(i)
(a) Each report shall identify each incidence of deviation from a permit term or condition including those that occur during startups, shutdowns, and malfunctions.	
(1) A deviation shall mean any instance in which emission limits, emission standards, and/or work practices were not complied with, as indicated by observations, data collection, and monitoring specified in this permit. Some examples of deviations are:	
(i) The water to fuel at a weight ratio exceeded the limit set during the most recent periodic or performance test; this qualifies as an Excess Emissions Event.	40 CFR 60.334(j)(1)

Federally Enforceable Provisos	Regulations
(ii) Water was not injected into the fuel gas while the engine was in operation. (iii) The water injection system was not installed, maintained, and/or operated in a manner that minimizes emissions. (iv) The pollutant emission rate exceeded the applicable emission limit specified in provisos 1 and 2 of the *Emissions Standards* section of this subpart. (v) Fuel gas with a hydrogen sulfide content of less than or equal to 10 grains/100 Scf was burned as fuel. (vi) The SCCT was not tested at the required frequency, and/or was not tested with the methods specified. (vii) Required monitoring was not conducted according to the specified monitoring plans. (viii) Records were not kept appropriately. (ix) Reports were not submitted appropriately. (x) There was a failure to take immediate corrective actions when a deviation was determined to have occurred. (2) For each deviation event, the following information shall be submitted. (i) Emission source description (ii) Permit requirement (iii) Date (iv) Starting time (v) Duration	

Provisos for 5050 BHP SCCT Engine

Federally Enforceable Provisos	Regulations
(vi) Actual quantity of pollutant or parameter	
(vii) Cause	
(viii) Actions taken to return to normal operating conditions	
(ix) Total operating hours of the affected source during the reporting period	
(x) Total hours of deviation events during the reporting period	
(xi) Total hours of deviation events that occurred during start ups, shut downs, and malfunctions during the reporting period	
(b) Except as provided for in proviso 2(e) of this section, each Excess Emissions Report shall meet the requirements specified in either §60.7(c) of 40 CFR Part 60, Subpart A.	
(c) If no deviation event occurred during the reporting period, a statement that indicates there were no deviations from the permit requirements shall be included in the report.	
(d) Each report shall cover a calendar semi-annual period and shall be submitted within thirty days of the end of each calendar semi-annual period.	40 CFR 60.334(j)(5)
(e) The report content specified in proviso 2(a) of this section may be modified upon receipt of Departmental approval.	
3. Each deviation from the requirements specified in this subpart, including those that occur during startups, shutdowns, and malfunctions, shall be reported to the Department in a manner that complies with proviso 15(b) and 21(b) of the general proviso subpart of this permit.	Rule 335-3-16-.05(c)(2) Rule 335-3-16-.05(c)(3)(ii)

Summary Page for Sulfur Recovery System and Thermal Oxidizer

Permitted Operating Schedule: **24** Hours/Day x **365** Days/Year = **8760** Hours/Year

Emission limitations:

Emission Point #	Description	Pollutant	Emission Limit	Regulation
	Sulfur Recovery System			
		During performance test:		
		Sul Rec %	100-[17.91/sul feed rate]	335-3-14-.04(9)(b) 40 CFR 60.642(a)
		During continuous operations:		
		Sul Rec %	99.7-[17.91/sul feed rate]	335-3-14-.04(9)(b) 40 CFR 60.642(b)
		During performance test & continuous operations:		
		CO	24.1 Lbs/Hour	335-3-14-.04(9)(b))
		NO_X	7.3 Lbs/Hour	335-3-14-.04(9)(b)
		SO_2	64.8 Lbs/Hour	335-3-14-.04(9)(b)
		VOC	2.1 Lbs/Hour	335-3-14-.04(9)(b)
		Oxid Eff	98.0 %	335-3-10.02(64) 40 CFR 60.646(b)(2)
		H_2S	No venting to atmosphere	Rule 335-3-5-.03(2)
		H_2S	20 ppbv of H_2S off site	Rule 335-3-5-.03(2)
TO-01	Thermal oxidizer	Opacity	No more than one 6 min avg. > 20% Or	335-3-4-.01(1)(a)
		Opacity	No 6 min avg. > 40%	335-3-4-.01(1)(a)

Individual Process Units:

Sulfur recovery system:
- Acid gas enhancement unit
- Sulfur recovery unit
- Tail gas cleanup unit

TO-01 With thermal oxidizer

Slop oil tank
Produced water tank
Sulfur tank

Provisos for Sulfur Recovery System and Thermal Oxidizer

Federally Enforceable Provisos	Regulations
Applicability	
1. The sulfur recovery system and thermal oxidizer shall be subject to requirements specified in Rule 335-3-16 of the Alabama Department of Environmental Management Administrative Code and to this subpart of this permit.	Rule 335-3-16-.03
2. The sulfur recovery system and thermal oxidizer shall be subject to the requirements of 40 CFR 60 Subpart LLL and to this subpart of this permit. All definitions laid out in 40 CFR 60.641 shall apply.	40 CFR 60.640(a), (c), & (d), & 40 CFR 60.641
3. The sulfur recovery system and thermal oxidizer shall be subject to the requirements specified in the Prevention of Significant Deterioration regulations and to this subpart of this permit.	Rule 335-3-14-.04(9)
4. The thermal oxidizer shall be subject to the requirements specified in Rule 335-3-4-.01(1) and Rule 335-3-5-.03(2) of the Alabama Department of Environmental Management Administrative Code and to this subpart of this permit.	Rule 335-3-4-.01(1) Rule 335-3-5-.03(2)
5. The sulfur recovery system and thermal oxidizer shall be subject to either 40 CFR, Part 64 or to proviso 33 of the *General Permit Provisos* subpart of this permit and to this subpart of this permit.	40 CFR Part 64
Emissions Standards	
1. The sulfur recovery efficiency shall meet or exceed the requirements specified in either proviso 1(a) or (b), as appropriate.	Rule 335-3-14-.04(9)(b)
(a) During a performance test, the minimum sulfur recovery efficiency shall be the lesser of either the calculation specified in proviso 1(a)(1) of this section or the amount specified in proviso 1(a)(2) of this section of this subpart.	40 CFR 60.642(a) & 40 CFR 60.643(a)(1)
(1) Minimum Sulfur Recovery Efficiency % $[Z_i]$= $100.0 - \left[\frac{17.91}{\text{Sulfur feed rate (LTons/Day)}} \right]$	
Or	

Provisos for Sulfur Recovery System and Thermal Oxidizer

Federally Enforceable Provisos	Regulations
(2) 99.7%	
(b) During continuous operations, the minimum sulfur recovery efficiency shall be the lesser of either the calculation specified in provision 1(b)(1) of this section or the amount specified in proviso 1(b)(2) of this section of this subpart.	40 CFR 60.642(b) & 40 CFR 60.643(a)(2)
(1) Minimum Sulfur Recovery Efficiency % $[Z_c]$= $99.7 - \left[\frac{17.91}{\text{Sulfur feed rate (LTons/Day)}}\right]$	
Or	
(2) 99.4%	
2. Pollutant emission rates from the thermal oxidizer shall not exceed the requirements specified in proviso 2(a) through (e) of this section of this subpart. Emission rates shall be rounded to one decimal place.	Rule 335-3-14-.04(9)(b)
(a) 64.80 Lbs/Hour of sulfur dioxide	
(b) 24.10 Lbs/Hour of carbon monoxide	
(c) 7.3 Lbs/Hour of nitrogen oxide	
(d) 2.1 Lbs/Hour of volatile organic compounds	
(e) At least 98% of the sulfur compounds leaving thermal oxidizer No. TO-01 shall be emitted as sulfur dioxide.	40 CFR 60.646(b)(2) & 40 CFR 60.643
3. Visible emissions from the thermal oxidizer shall meet the requirements specified in proviso 3(a) through (c) of this section of this subpart.	
(a) Except for one 6-minute period during any 60-consecutive minute period, the thermal oxidizer shall not discharge into the atmosphere particulate that results in an opacity greater than 20%, as determined by a 6-minute average.	Rule 335-3-4-.01(1)(a)
(b) At no time shall the thermal oxidizer discharge into the atmosphere particulate that results in an opacity greater than 40%, as determined by a 6-minute average.	Rule 335-3-4-.01(1)(b)

Provisos for Sulfur Recovery System and Thermal Oxidizer

Federally Enforceable Provisos	Regulations
4. All process gas streams containing 0.10 of a grain of hydrogen sulfide per Scf shall be burned to the extent that the ground level concentrations of hydrogen sulfide shall be less than twenty (20) parts per billion beyond plant property limits, averaged over a thirty (30) minute period.	Rule 335-3-5-.03(2)
5. Provided the high sulfur content gas stream(s) produced in the sour gas sweetening unit or in the sulfur recovery system are designed to be processed in the sulfur recovery system, but are diverted away from that system to be burned in the facility emergency flare (No. F-01) for more than an accumulated forty (40) hours during a calendar quarter of a year, a root cause analysis and appropriate corrective action shall be undertaken to minimize the frequency of flaring events along with the volumes of high sulfur content gas burned during the flaring events.	
Compliance and Performance Test Methods and Procedures	
1. Compliance with provisos 1(a) and (b) of this *Emission Standards* section of this subpart of this permit shall be demonstrated through the use of the Sulfur recovery efficiency and oxidation efficiency, as follows:	Rule 335-3-16-.05(c)(1)(i), Rule 335-3-1-.05, 40 CFR 60.643(b), & 40 CFR 60.644(c)(1)
(a) Sulfur recovery efficiency $[R_i \& R_c]$ % = [100] X [Sulfur feed rate (LTons/Day) - Sulfur emission rate (LTons/Day)] / [Sulfur feed rate (LTons/Day)]	40 CFR 60.646(a)(5)
(b) The Sulfur feed rate [X] in LTons/Day shall be determined once every 24 hours, where $X = (K)(Q_a)(Y)$.	40 CFR 60.646(a)(4) & 40 CFR 60.644(b)(1)
(1) K = Constant set in §60.644(b)(1)	
(2) Q_a = average acid gas volumetric flowrate from the sweetening unit, which shall be continuously measured, and shall be averaged and recorded at least once every 24-hours.	40 CFR 60.646(a)(3) & 40 CFR 60.644(b)(2)
(3) Y = average acid gas H_2S concentration in the flow from the sweetening unit, which shall be sampled once every 24-hours at equal intervals, and analyzed using the Tutwiler method, chromatographic procedures, or other methods allowed by EPA.	40 CFR 60.646(a)(2), 40 CFR 60.644(b)(3), 40 CFR 60.648, & 40 CFR 60.17

Provisos for Sulfur Recovery System and Thermal Oxidizer

Federally Enforceable Provisos	Regulations
(c) Produced elemental sulfur [S] in lb/hr shall be determined at least once every 24-hour period utilizing methods and procedures laid out in 40 CFR 60.646(a)(1).	40 CFR 60.646(a)(1) & 40 CFR 60.644(c)(2)
(d) The Sulfur emission rate [E] in LTon/Day shall be computed during performance tests, as specified in proviso 2 of this section of this subpart of this permit.	40 CFR 60.644(c)(3)
(e) The following rules shall apply to the oxidation efficiency:	
(1) Provided the TRS concentration in the thermal oxidizer stack gases is greater than 5 ppmv, the oxidation efficiency shall be calculated using the following equation:	
Oxidation efficiency % = $100\% \times \frac{[\text{Total } SO_2 \text{ (Lbs/Hour)}] - [\text{TRS (Lbs/Hour)}]}{\text{Total } SO_2 \text{ (Lbs/Hour)}}$	
(i) Total SO_2 [Lbs/Hour] = Thermal Oxidizer stack SO_2 emissions, which shall be determined during each performance test required by proviso (d) of this section of this subpart of this permit.	
(ii) TRS [Lbs/Hour] = Thermal Oxidizer stack Total Reduced Sulfur emissions, which shall be determined during each performance test required by proviso (d) of this section of this subpart of this permit.	
(2) Provided the TRS concentration in the thermal oxidizer stack gases is less than, or equal to, 5 ppmv, then the oxidation efficiency shall be 98%.	
(f) The following additional rules shall apply:	40 CFR 60.641
(1) The sulfur feed rate, sulfur compound emission rate and the sulfur recovery efficiency shall be rounded off to one decimal place.	

Provisos for Sulfur Recovery System and Thermal Oxidizer

Federally Enforceable Provisos	Regulations
(2) Sulfur feed rate (expressed in pounds per hour, rounded to one decimal place) means the rates that sulfur compounds enter the sulfur recovery system.	
(3) Sulfur compound emission rate (expressed in pounds per hour, rounded to one decimal place) means the rate the sulfur compounds are emitted from the thermal oxidizer.	
2. A performance test shall be conducted in accordance to the requirements specified in provisions 1(a) and (b) of this section of this subpart.	Rule 335-3-16-.05(c)(1)(i), & 40 CFR 60.644(a)
(a) At lease once every twelve (12) months	
(b) Consist of three runs of at least 1-hour in duration each.	
(1) Each run shall test for the emissions of CO, NO_X, SO_2, TRS and VOC.	
(2) Each run shall be conducted in accordance to the appropriate reference methods and procedures specified in proviso 2(b)(2)(i) through (ix) of this section of this subpart.	
(i) 40 CFR Part 60 Appendix A, Method 1 or 1A	
(ii) 40 CFR Part 60 Appendix A, Method 2 or 2A or 2B or 2C or 2D or 2E	40 CFR 60.644(c)(4)(iv)
(iii) 40 CFR Part 60 Appendix A, Method 3 or 3A or 3B or 3C	
(iv) 40 CFR Part 60 Appendix A, Method 4	
(v) 40 CFR Part 60 Appendix A, Method 6 or 6A or 6B or 6C	40 CFR 60.644(c)(4)(i)
(vi) 40 CFR Part 60 Appendix A, Method 7 or 7A or 7B or 7C or 7D or 7E	
(vii) 40 CFR Part 60 Appendix A, Method 10 or 10A or 10B	

Provisos for Sulfur Recovery System and Thermal Oxidizer

Federally Enforceable Provisos	Regulations
(viii) 40 CFR Part 60 Appendix A, Method 15 and/or Method 16 or 16A or 16B	40 CFR 60.644(c)(ii) & 40 CFR 60.644(c)(iii)
(ix) 40 CFR Part 60 Appendix A, Method 18 or 25A or 25B or 25C or 25D or 25E	
(3) During each run, the Thermal Oxidizer Firebox temperature shall be recorded.	40 CFR 60.646(b)(2)
(c) The minimum reduction efficiency [Z_i] and the actual reduction efficiency [R_i] shall be determined for each run, and for each test.	40 CFR 60.644(b) & (c)
(d) The pollutants tested for and the methods and procedures that are utilized may be modified upon receiving Departmental approval.	
3. Each process gas stream that has to be vented to the atmosphere shall be captured so that it can be burned, or recycled to the process.	
(a) Compliance shall be demonstrated by conducting a process flow design evaluation of the production facility in conjunction with a visual inspection of the facility.	
(b) Provided vessels or equipment are being de-pressured and/or emptied and the reduced pressure will not allow flow of the process gas stream to the combustion device, the venting to the atmosphere of any gas stream shall be allowed, but the duration of the venting shall not exceed 15 continuous minutes.	
4. Excess emissions that are indicated by the continuous emission monitoring system (CEMS) shall be considered violations of the applicable required minimum sulfur recovery level for the purposes of this permit except as listed below.	40 CFR 60.644(d), 40 CFR 60.646(b)(2) 40 CFR 60.646(f), & (g), & 40 CFR 60.643(a)(1)(i)

Provisos for Sulfur Recovery System and Thermal Oxidizer

Federally Enforceable Provisos	Regulations
(a) Data recorded from the continuous monitors during periods of startup or shutdown of the sulfur recovery system shall be excluded from the compliance averaging period for sulfur recovery efficiency. The sulfur recovery system shall be operated in a manner so that sulfur dioxide emissions are minimized during startup or shutdown periods. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup or shutdown constitute violations.	
(b) Data recorded from the continuous monitors during periods of malfunctions shall be excluded from compliance averaging periods for sulfur recovery efficiency. A malfunction is defined as any sudden and unavoidable failure of the air pollution control equipment or process equipment or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable condition or preventable equipment breakdown shall not be considered malfunctions.	
(c) Data records from the continuous monitors during periods when the data does not represent accurate sulfur recovery efficiency or during periods when the CEM's exceeds the calibration drift (as specified in the respective performance specification tests) shall be excluded from the compliance averaging periods. The burden of proof to demonstrate that the data does not reflect accurate sulfur recovery efficiency and sulfur dioxide emissions reading shall be the responsibility of the permittee.	
Emission Monitoring	
1. A monitoring system that meets the requirements specified in Appendix C of this permit shall be utilized.	Rule 335-3-16-.05(c)(1), 40 CFR 64.6(b) & (c), & 40 CFR 60.646

Provisos for Sulfur Recovery System and Thermal Oxidizer

Federally Enforceable Provisos	Regulations
Recordkeeping and Reporting Requirements	
1. A record of the information specified in provisos 1(a) through (f) of this section of this subpart shall be maintained and made available for inspection.	Rule 335-3-16-.05(c)(2), 40 CFR 64.9, 40 CFR 60.7, 40 CFR 60.646(f) & (g), & 40 CFR 60.647(a)
(a) The date, starting time and duration of each deviation from the requirements specified in this subpart along with the cause and corrective actions taken.	
(b) The date, time and results of each performance tests along with any other tests conducted on the thermal oxidizer that provides additional stack pollutant content data.	
(c) The date and time of each shut down and start up of the gas sweetening unit, the 3 stage Claus sulfur recovery unit, the SCOT tailgas unit or the thermal oxidizer.	
(d) Date and type of maintenance that affects air emissions	
(e) Results of each visual emission observation	
(f) The three hour rolling average CMS calculations and analysis of the sulfur recovery, the sulfur dioxide emissions and the thermal oxidizer firebox temperature.	
2. Periodic Monitoring Reports and Excess Emissions Reports meeting the requirements specified in proviso 2(a) through (d) of this section of this subpart shall be submitted to the Department.	Rule 335-3-16-.05(c)(2) Rule 335-3-16-.05(c)(3)(i)
(a) Each Periodic Monitoring Report shall identify each incidence of deviation from a permit term or condition including those that occur during startups, shutdowns, and malfunctions.	
(1) A deviation shall mean any instance in which emission limits, emission standards, and/or work practices were not complied with, as indicated by observations, data collection, and monitoring specified in this permit. Some examples of deviations are:	

Provisos for Sulfur Recovery System and Thermal Oxidizer

Federally Enforceable Provisos	Regulations
(i) The emission limits in provisos 2(b) through (e) of the *Emission Standards* section of this subpart of this permit were not complied with.	
(ii) One, or more, process gas streams were vented to atmosphere for more than 15 consecutive minutes in duration.	
(iii) The daily, quarterly and annual requirements specified in Appendix F of 40 CFR Part 60 were not met.	
(iv) The opacity exceeded 20% for more than one 6-minute averaging period during any consecutive 60-minute period when utilizing Method 9.	
(v) The opacity exceeded 40% during any 6-minute period when utilizing Method 9.	
(vi) Visible emissions were observed for less than 12 minutes when utilizing Method 22.	
(vii) Acid gas was diverted to the flare for 40 hours, or more, during any calendar quarter.	
(viii) Required monitoring was not conducted according to the specified monitoring plans.	
(ix) Records were not kept appropriately.	
(x) Reports were not submitted appropriately.	
(xi) There was a failure to take immediate corrective actions when a deviation was determined to have occurred.	

Provisos for Sulfur Recovery System and Thermal Oxidizer

Federally Enforceable Provisos	Regulations
(2) Each report shall cover no more that a calendar semi-annual period and shall be submitted within thirty days of the end reporting period. Each report shall contain the information specified in proviso 2(c) of this section for each deviation.	
(b) Each Excessive Emission and CMS Performance Report and Summary Report shall meet the following requirements:	
(1) Examples of excess emissions events are:	
(i) The 3-hour rolling average sulfur recovery [R_c] is less than the required recovery efficiency [Z_c].	40 CFR 60.643(a)(1)(ii) & 40 CFR 60.647(a)(1)
(ii) The 3-hour rolling average sulfur dioxide emissions exceeded 64.80 Lbs/Hour.	
(iii) The 3-hour rolling average thermal oxidizer firebox temperature was less than that required by the *Periodic Monitoring* column of the *Sulfur Recovery System and Thermal Oxidizer* table of Appendix C of this subpart.	40 CFR 60.647(b)(2)
(iv) The continuous emission monitoring system failed to meet the requirements specified in Appendix F 40 CFR Part 60 while the sulfur removal system remained in operation.	
(v) There was a failure to take immediate corrective actions when a deviation was determined to have occurred.	
(2) Each report shall cover a calendar semi-annual period and shall be submitted within thirty days of the end of each reporting period. Each report shall contain the information specified in proviso 2(c) for each event.	
(c) Except as provided for in proviso 2(d) of this section, the following information shall be included with each deviation and/or excess emissions event:	40 CFR 60.7

Provisos for Sulfur Recovery System and Thermal Oxidizer

Federally Enforceable Provisos	Regulations
(1) Emission source description (2) Permit requirement (3) Date (4) Starting time (5) Duration (6) Actual quantity of pollutant or parameter (7) Cause (8) Actions taken to return to normal operating conditions (9) Total operating hours of the affected source during the reporting period (10) Total hours of deviation events during the reporting period (11) Total hours of deviation events that occurred during start ups, shut downs, and malfunctions during the reporting period (d) The report content and format in proviso 2(c) of this section may be modified upon receipt of Departmental approval.	
3. Each deviation from the requirements specified in this subpart, including those that occur during startups, shutdowns, and malfunctions, shall be reported to the Department in a manner that complies with proviso 15(b) and 21(b) of the general proviso subpart of this permit.	Rule 335-3-16-.05(c)(2) Rule 335-3-16-.05(c)(3)(ii)
4. The recordkeeping and reporting requirements specified in §60.647 of 40 CFR Part 60, Subpart LLL and in §60.7 and §60.19 of 40 CFR Part 60, Subpart A shall be maintained and made available for inspection and submitted to the Department when required.	Rule 335-3-10-.02(64) §60.647 §60.7 §60.19

Summary Page for Emergency Facility Flare

Permitted Operating Schedule: **24** Hours/Day x **365** Days/Year = **8760** Hours/Year

Emission limitations:

Emission Point #	Description	Pollutant	Emission Limit	Regulation
F-01	Emergency flare	H_2S	No venting to atmosphere	Rule 335-3-5-.03(2)
		H_2S	20 ppbv of H_2S off site	Rule 335-3-5-.03(2)
	@ Available Sulfur <= 5 LTons/Day	SO_2	Unlimited	Rule 335-3-5-.03(3)
		CO	None	
		NO_X	None	
		VOC	None	
		Opacity	> 0% for less than 5 minutes during any 120 minutes	Rule 335-3-10-.02(63) 40 CFR 60.18(c)(1)
		Benzene	< 0.90 Mg/year Controlled	40 CFR 63.764(e)(1)(ii)

Individual Process Units:

Inlet gathering & separation unit
Gas sweetening unit
Tri-Ethylene Glycol dehydration unit [TEG]
Condensate stabilization unit
Natural gas liquids recovery unit
Acid gas enhancement unit
Sulfur recovery unit
SCOT tailgas cleanup unit
with closed vent systems and flare

Provisos for Emergency Facility Flare

Federally Enforceable Provisos	Regulations
Applicability	
1. The flare shall be subject to the requirements specified in Rule 335-3-16 of the Alabama Department of Environmental Management Administrative Code and to this subpart of this permit.	Rule 335-3-16-.03
2. The flare shall be subject to the requirements specified in the Prevention of Significant Deterioration regulations and to this subpart of this permit.	Rule 335-3-14-.04(9)
3. The flare shall be subject to the requirements specified in Rule 335-3-5-.03(2) of the Alabama Department of Environmental Management Administrative Code and to this subpart of this permit.	Rule 335-3-5-.03(2)
4. Each facility that handles gas or refinery gas that contains more than 0.10 grains of hydrogen (H_2S) per standard cubic foot (Scf) shall be subject to this subpart of this permit.	Rule 335-3-5-.03(1)
5. The flare shall be subject to the requirements specified in 40 CFR 60.18 and to this subpart of this permit.	40 CFR 60.18(a), & 40 CFR 60.633(g)
6. The flare shall be subject to the requirements specified in either 40 CFR Part 64 or to proviso 33 of the *General Permit Provisos* subpart and to this subpart of this permit.	40 CFR Part 64
7. The Tri-ethylene Glycol Dehydration System is subject to a benzene limit that makes it an exempt area source under 40 CFR 63 Subpart HH, as determined using a GRI-GlyCALC simulation. All terms used in this subpart retain the same definitions given in 40 CFR 63.761.	40 CFR 63.764(e)(1)(ii) 40 CFR 63.772(b)(2)(i)
Emission Standards	
1. Provided available sulfur is equal to or less than 5 long tons per day, there is no limit on sulfur dioxide emissions. A record of SO_2 emissions shall be kept for reporting purposes.	Rule 335-3-16-.05(a) & Rule 335-3-5-.03(3)
2. All process gas streams containing 0.10 of a grain of hydrogen sulfide per Scf shall be burned to the extent that the ground level concentrations of hydrogen sulfide shall be less than twenty (20) parts per billion beyond plant property limits, averaged over a thirty (30) minute period.	Rule 335-3-5-.03(2)

Provisos for Emergency Facility Flare

Federally Enforceable Provisos	Regulations
3. The flare shall meet the requirements specified in 2(a) and (b) of this section of this subpart.	Rule 335-3-10-.02(1) & 40 CFR 60.633(g)
(a) Except for an accumulated total of 5-minutes during any 2 consecutive hours, the flare shall be operated with no visible emissions.	40 CFR 60.18(c)(1)
(b) The flare shall meet the BTU, velocity, and assist requirements specified in 40 CFR 60.18(c)(3) – (6).	40 CFR 60.18(c)(1) – (6)
4. The total average annual benzene emissions shall be less than 0.90 Mg/year, on a controlled basis.	40 CFR 63.764(e)(1)(ii)
Compliance and Performance Test Methods and Procedures	
1. Each process gas stream that can be sent to the flare shall be tested in accordance to the requirements specified in proviso 1(a) through (e) of this section of this subpart.	Rule 335-3-16-.05(c)(1)(i)
(a) BTU and hydrogen sulfide content testing shall consist of capturing a representative sample of the exhaust stack gases at a frequency of no less than once each twelve (12) months.	
(b) The sample shall be analyzed for its BTU content by utilizing the ASTM Analysis Method D1826-77 or equivalent method. [Fuel Gas BTU/Scf]	
(c) The sample shall be analyzed for its hydrogen sulfide content by utilizing the Tutwiler procedures found in 40 CFR §60.648 or the chromatographic analysis procedures found in ASTM E-260 or the stain tube procedures found in GPA 2377-86 or those provided by the stain tube manufacture. [Stream (H_2S Mole %)]	
(d) Provided multiple process streams can be sent to the flare and it is possible to capture a common stream whose contents would be representative of all the streams, that common stream may be used instead of the individual process streams.	
(e) The frequency of this testing may be modified upon receipt of Department approval.	

Provisos for Emergency Facility Flare

Federally Enforceable Provisos	Regulations
2. Each process gas stream that has to be vented to the atmosphere shall be captured so that it can be burned, or recycled to the process. (a) Compliance shall be demonstrated by conducting a process flow design evaluation of the production facility in conjunction with a visual inspection of the facility. (b) Provided vessels or equipment are being de-pressured and/or emptied and the reduced pressure will not allow flow of the process gas stream to the combustion device, the venting to the atmosphere of any gas stream shall be allowed, but the duration of the venting shall not exceed 15 continuous minutes.	
3. The permittee shall determine the annual benzene emissions utilizing either direct monitoring or GRI-GlyCalc simulations.	40 CFR 63.772(b)(2)(i) & (ii)
Emission Monitoring	
1. A monitoring system that meets the requirements specified in Appendix D of this permit shall be utilized.	Rule 335-3-16-.05(c)(1), 40 CFR 64.6(b) & (c), & 40 CFR 60.18(c)
Record Keeping and Reporting Requirements	
1. A record of the information specified in provisos 1(a) through (l) of this section of this subpart shall be maintained and made available for inspection. (a) The date, starting time and duration of each deviation from the requirements specified in this subpart along with the cause and corrective actions taken. (b) Results of each visual emission observation (c) Stream H_2S Content Stream (H_2S Mole %) (d) Name of stream that was flared (e) Stream volume that was flared [Stream Volume Burned (MScf/Day)]	Rule 335-3-16-.05(c)(2)

Provisos for Emergency Facility Flare

Federally Enforceable Provisos	Regulations

(f) Assist gas volume that was flared

Assist Gas Volume Burned (MScf/Day)

(g) Stream H_2S (Lbs/Day) =

[Stream Volume Burned (MScf/Day)] X [1000 Scf/MScf)] X [1 Mole/380 SCF] X [{Stream (H_2S Mole %)}/{100}] X [34 Lbs. H_2S/Mole H_2S]

(h) Flare H_2S Feed Rate (Lbs/Day) =

Σ of Stream H_2S (Lbs/Day)

(i) Flare SO_2 (Lbs/Day) =

$$\frac{[\text{Flare } H_2S \text{ Feed Rate (Lbs/Day)}] \times [64 \text{ Lbs of } SO_2 / \text{ Lb Mole}] \times [0.98]}{[34 \text{ Lbs } H_2S/\text{Lb Mole}]}$$

(j) Number of hours that the flare was operated during the month =

[Flare (Hours/Day)]

(k) H_2S feed (Lbs/Hour) =

$$\frac{\text{Flare } H_2S \text{ Feed Rate (Lbs/Day)}}{\text{Flare (Hours/Day)}}$$

(l) Annual Benzene Emissions (Mg/Year)

2. Periodic and Excess Emissions Monitoring Reports meeting the requirements specified in proviso 2(a) through (d) of this section of this subpart shall be submitted to the Department. — Rule 335-3-16-.05(c)(2) Rule 335-3-16-.05(c)(3)(i)

(a) Each report shall identify each incidence of deviation from a permit term or condition including those that occur during startups, shutdowns, and malfunctions.

(1) A deviation shall mean any instance in which emission limits, emission standards, and/or work practices were not complied with, as indicated by observations, data collection, and monitoring specified in this permit. Some examples of deviations are:

(i) There was a failure to maintain the presence of a flame or igniter spark at the flare tip when a process gas stream could have been sent to it.

Federally Enforceable Provisos	Regulations
(ii) There was a failure to take immediate corrective actions when a deviation was determined to have occurred.	
(iii) One, or more, process gas streams were vented to atmosphere for more than 15 consecutive minutes in duration.	
(iv) The flare(s) H_2S feed rate exceeded the indicator setpoint specified in Appendix D.	
(v) The 30-minute average offsite hydrogen sulfide concentration exceeded 20 ppbv, as determined by air quality modeling study.	
(vi) The duration of visible emissions exceeded an accumulated total of five (5) minutes during any consecutive 120-minute period.	
(vii) Process gas stream H_2S, and/or BTU content was not determined at the appropriate frequency, or with the correct methods.	
(viii) Required monitoring was not conducted according to the specified monitoring plans.	
(ix) Records were not kept appropriately.	
(x) Reports were not submitted appropriately.	
(2) For each deviation event, the following information shall be submitted.	
(i) Emission source description	
(ii) Permit requirement	
(iii) Date	
(iv) Starting time of pollutant or parameter	

Provisos for Emergency Facility Flare

Federally Enforceable Provisos	Regulations
(v) Duration (vi) Actual quantity of pollutant or parameter (vii) Cause (viii) Actions taken to return to normal operating conditions (ix) Total operating hours of the affected source during the reporting period (x) Total hours of deviation events during the reporting period (xi) Total hours of deviation events that occurred during start ups, shut downs, and malfunctions during the reporting period	
(b) If no deviation event occurred during the reporting period, a statement that indicates there were no deviations from the permit requirements shall be included in the report.	
(c) Except as provided for in proviso 2(e) of this section, each Excess Emissions report shall meet the requirements specified in either §60.7(c) of 40 CFR Part 60, Subpart A.	
(d) Each report shall cover a calendar semi-annual period and shall be submitted within thirty days of the end reporting period.	
(e) The report content and format in proviso 2(a) through (d) of this section may be modified upon receipt of Departmental approval.	
3. Each deviation from the requirements specified in this subpart, including those that occur during startups, shutdowns, and malfunctions, shall be reported to the Department in a manner that complies with proviso 15(b) and 21(b) of the general proviso subpart of this permit.	Rule 335-3-16-.05(c)(2) Rule 335-3-16-.05(c)(3)(ii)
4. The facility shall submit a copy of the annual Benzene emissions with the annual Title V Emissions Estimates.	

Summary Page for Equipment Leaks of Volatile Organic Compounds

Permitted Operating Schedule: **24** Hours/Day x **365** Days/Year = **8760** Hours/Year

Emission limitations:

Emission Point #	Description	Pollutant	Emission Limit	Regulation
	All affected facilities	Fugitive VOC	LDAR work practices	Rule 335-10-.02(63) 40 CFR Part 60 Sub KKK

Affected facility within process unit:

Compressors

Group of equipment:

- Each valve
- Each pump
- Each pressure relief device
- Each sampling connection system
- Each open-ended valve or line
- Each flange or other connector

Process units :

- Inlet gathering & separation unit
- Condensate stabilization unit
- Gas sweetening unit
- Gas dehydration unit
- NGL Extraction unit
- Acid gas enhancement unit
- Sulfur recovery unit
- SCOT tailgas cleanup unit
- Produced & process wtr sys
- Fuel gas system
- Closed vent system with flare

Provisos for Equipment Leaks of Volatile Organic Compounds

Federally Enforceable Provisos	Regulations
Applicability	
1. Each emission source denoted on the *Summary Page* of this subpart shall be subject to the requirements specified in Rule 335-3-16 of the Alabama Department of Environmental Management Administrative Code and to this subpart of this permit.	Rule 335-3-16-.03
2. Each affected facility (as defined in provisions 2(a) through (c) of this section of this subpart) that is located within one of the process units denoted on the *Summary page* of this subpart shall comply with the requirements specified in 40 CFR Part 60, Subpart KKK and to this subpart of this permit.	Rule 335-10-.02(63) 40 CFR 60.630(a)(1) & (b)
(a) Each compressor	40 CFR 60.630(a)(2)
(b) Each group of equipment (as defined in provision 2(b)(1) through (6) of this section of this subpart) that is located within a process unit.	40 CFR 60.630(a)(3)
(1) Each valve	
(2) Each pump	
(3) Each pressure relief device	
(4) Each sampling connection system	
(5) Each open-ended valve or line	
(6) Each flange or other connector	
(c) That is in VOC or wet gas service (as defined in §60.481 of 40 CFR Part 60, Subpart VV and §60.631 of 40 CFR Part 60, Subpart KKK).	
Emissions Standards	
1. Except as provided for in §60.484 of 40 CFR Part 60, Subpart VV, each affected facility shall comply with the requirements specified in provisions 1(a) through (i) of this section of this subpart.	Rule 335-3-16-.05(a), Rule 335-10-.02(63), 40 CFR 60.632(a), (b), & (c), & 40 CFR 60.634

Provisos for Equipment Leaks of Volatile Organic Compounds

Federally Enforceable Provisos		Regulations
(a)	Except as provided for in §60.633(f) of 40 CFR Part 60, Subpart KKK, each compressor shall meet the requirements specified in §60.482-3, §60.482-9 and §60.482-10 of 40 CFR Part 60, Subpart VV.	40 CFR 60.482-1, 40 CFR 60.482-3, 40 CFR 60.482-9, & 40 CFR 60.482-10
(b)	Except as provided for in §60.630(d) of 40 CFR Part 60, Subpart KKK, each valve shall meet the requirements specified in §60.482-7, §60.482-8, and §60.482-9 of 40 CFR Part 60, Subpart VV and either §60.483-1 or §60.483-2 of 40 CFR Part 60, Subpart VV.	40 CFR 60.482-7, 40 CFR 60.482-8, & 40 CFR 60.482-9
(c)	Except as provided for in §60.630(d) of 40 CFR Part 60, Subpart KKK, each pump shall meet the requirements specified in §60.482-2, §60.482-8, §60.482-9 and §60.482-10 of 40 CFR Part 60, Subpart VV.	40 CFR 60.482-2, 40 CFR 60.482-8, 40 CFR 60.482-9, & 40 CFR 60.482-10
(d)	Except as provided for in §60.630(b) and (d) of 40 CFR Part 60, Subpart KKK, each pressure relief device shall meet the requirements specified in §60.482-4, §60.482-8, §60.482-9 and §60.482-10 of 40 CFR Part 60, Subpart VV.	40 CFR 60.482-4, 40 CFR 60.482-8, 40 CFR 60.482-9, & 40 CFR 60.482-10
(e)	Except as provided for in §60.630(c) of 40 CFR Part 60, Subpart KKK, each sampling connection system shall meet the requirements specified in §60.482-5, §60.482-9 and §60.482-10 of 40 CFR Part 60, Subpart VV.	40 CFR 60.482-5, 40 CFR 60.482-9, 40 CFR 60.482-10
(f)	Each open-ended valves and lines shall meet the requirements specified in §60.482-6 and §60.482-9 of 40 CFR Part 60, Subpart VV.	40 CFR 60.482-6, & 40 CFR 60.482-9
(g)	Each flange or other connector shall meet the requirements specified in §60.482-8 and §60.482-9 of 40 CFR Part 60, Subpart VV.	40 CFR 60.482-8, & 40 CFR 60.482-9
(h)	Provided a closed vent system and control device is utilized to meet any of the above requirements, each closed vent system and control device shall meet the requirements specified in §60.482-9 and §60.482-10 of 40 CFR Part 60, Subpart VV.	40 CFR 60.482-9, & 40 CFR 60.482-10

Provisos for Equipment Leaks of Volatile Organic Compounds

Federally Enforceable Provisos	Regulations
(i) Provided a flare is utilized to meet any of the above requirements, the flare shall comply with the requirements specified in §60.18 of 40 CFR Part 60, Subpart A.	40 CFR 60.633(g)
Compliance and Performance Test Methods and Procedures	
1. Except as provided for in §60.633(c), (d), (e) and (f) of 40 CFR Part 60, Subpart KKK, compliance with the standards specified in provision 1 of the *emissions standards* section of this subpart shall be demonstrated through the utilization of the tests methods and procedures specified in §60.485 of 40 CFR Part 60, Subpart VV.	Rule 335-3-16-.05(c)(1)(i), Rule 335-10-.02(63), 40 CFR 60.632(d) & (f), 40 CFR 60.485, & 40 CFR 60.633(h)
Emission Monitoring	
1. The inspection and monitoring requirements specified in §60.482-1 through §60.482-10 of 40 CFR Part 60, Subpart VV and either §60.483-1 or §60.483-2 of 40 CFR Part 60, Subpart VV shall be complied with.	Rule 335-3-16-.05(c)(2), Rule 335-10-.02(63), 40 CFR 60.632(a), & 40 CFR 60.632(b)
Recordkeeping and Reporting Requirements	
1. Except as provided for in §60.633, §60.635 and §60.636 of 40 CFR Part 60, Subpart KKK, the recordkeeping and reporting requirements specified in §60.7 and §60.19 of 40 CFR Part 60, Subpart A, §60.486 and §60.487 of 40 CFR Part 60, Subpart VV shall be maintained and made available for inspection and submitted to the Department when required.	Rule 335-10-.02(63), 40 CFR 60.7, 40 CFR 60.19, 40 CFR 60.632(e), 40 CFR 60.635, 40 CFR 60.486, & 40 CFR 60.487
2. Periodic Monitoring Reports meeting the requirements specified in proviso 2(a) through (c) of this section of this subpart shall be submitted to the Department.	Rule 335-3-16-.05(c)(3)(i) & 40 CFR 60.636
(a) Each report shall identify each incidence of deviation from a permit term or condition including those that occur during startups, shutdowns, and malfunctions.	
(1) A deviation shall mean any instance in which emission limits, emission standards, and/or work practices were not complied with, as indicated by observations, data collection, and monitoring specified in this permit. Some examples of deviations are:	

Provisos for Equipment Leaks of Volatile Organic Compounds

Federally Enforceable Provisos	Regulations
(i) The VOC content of a process gas stream was not determined using methods outlined in §60.485.	
(ii) The type of service [VOC, gas/vapor, light liquid, heavy liquid, etc] was not determined for each affected component/	
(iii) Periodic monitoring required by §60.482 was not conducted at the specified intervals.	
(iv) The first repair attempt was not made within 5 days of detecting the leak.	
(v) A leak was not repaired within 15 days of detecting the leak, or by the next process unit shutdown.	
(vi) An affected pump was not equipped with a double seal, as required by §60.482-2(d).	
(vii) No notification was submitted to the Department of a skip period monitoring and repair frequency change.	
(viii) A process unit did not revert to a monthly monitoring schedule after the total number of leaking valves exceeded of 2% of all valves in process unit.	
(ix) An affected compressor was not equipped with a double seal and/or was not operated per the requirements specified in §60.482-3.	
(x) An affected open-ended valve or line was not equipped with a cap, blind flange, plug or second valve.	
(xi) Delay of repair requirements specified in §60.482-9 were not followed correctly.	

Provisos for Equipment Leaks of Volatile Organic Compounds

Federally Enforceable Provisos	Regulations

(xii) The closed vent system and control device did not meet the requirements specified in §60.482-10.

(xiii) Records were not maintained as required by 40 CFR 60 Subpart KKK, and/or this subpart of this permit.

(xiv) Reports were not submitted as required by 40 CFR 60 Subpart KKK, and/or this subpart of this permit.

(xv) There was a failure to take immediate corrective actions when a deviation was determined to have occurred.

(2) Except as provided for in proviso 2(d) of this section, the Periodic Monitoring report shall meet the requirements specified in proviso 2(b)(2)(i).

(i) For each deviation event, the following information shall be submitted.

(I) Emission source description

(II) Permit requirement

(III) Date

(IV) Starting time

(V) Duration

(VI) Actual quantity of pollutant or parameter

(VII) Cause

(VIII) Actions taken to return to normal operating conditions

(IX) Total operating hours of the affected source during the reporting period

Provisos for Equipment Leaks of Volatile Organic Compounds

Federally Enforceable Provisos	Regulations
(X) Total hours of deviation events during the reporting period (XI) Total hours of deviation events that occurred during start ups, shut downs, and malfunctions during the reporting period (b) Each report shall include the results of the monitoring performed per 40 CFR 60 Subpart KKK, as outlined in proviso 1 of this section of this subpart of this permit. (c) Each report shall cover a calendar semi-annual period and shall be submitted within thirty days of the end of each calendar semi-annual period. (d) The report content specified in proviso 2(a) and (b) of this section may be modified upon receipt of Departmental approval.	
3. Each deviation from the requirements specified in this subpart, including those that occur during startups, shutdowns, and malfunctions, shall be reported to the Department in a manner that complies with proviso 15(b) and 21(b) of the general proviso subpart of this permit..	Rule 335-3-16-.05(c)(2) Rule 335-3-16-.05(c)(3)(ii)

Appendix A: Utility Boiler Monitoring

Each 48.2 MMBTU/hr Utility Boiler

Monitoring approach:	*Periodic Monitoring*
I. Indicator	***Calculate NO_X & CO Emissions***
A. Measurement approach	Fuel gas volume to each unit shall be monitored with a system capable of measuring and recording the flow rate and/or the parameters utilized for flow rate calculation. BTU & H_2S content of fuel gas stream shall be determined annually, or at a frequency determined by the Department. Pollutant emission factors shall be determined during performance tests.
II. Indicator range	**CO emissions shall be maintained at < = 7.8 lb/hr** **NO_X emissions shall be maintained at < = 4.8 lb/hr** A deviation is defined as anytime the calculated emission rate exceeds the respective allowed emission rates. A deviation triggers an immediate inspection, corrective action, and reporting within 48 hours or two work days.
A QIP threshold	Not applicable
III. Performance criteria	
A. Data representiveness	Fuel gas volume monitor shall be located immediately upstream of each boiler, or at a common point upstream of both boilers. Fuel gas BTU & H_2S content shall be determined from samples that are representative of the fuel gas being consumed. Performance tests shall be undertaken while each boiler is being operated at normal loads.
B. Verification of operational status	Not applicable
C. QA/QC practices & criteria	The fuel gas volume monitor shall be calibrated at a frequency in accordance with the manufacturer's specifications, other written procedures that provide adequate assurance that the device is calibrated accurately, or at least annually whichever is more frequent. If the fuel gas monitor fails its calibration tests, the fuel gas monitor shall be taken out of service until repairs and/or replacements are made and a new calibration test is undertaken and passed.
D. Monitoring frequency	Fuel gas volume measured continuously. Fuel gas BTU & H_2S content shall be determined annually, or at a frequency set by the Department. Performance tests shall be undertaken every 5 years.

Data collection procedure	Calculate: Monthly, or as set by the Department, Pollutant emissions while utilizing the fuel volume, BTU content, emission factor and operating hours Fuel gas volume consumed Record: Monthly, or as set by the Department Fuel gas volume consumed Hours of operation. Pollutant emissions Record: Each occurrence Each fuel gas BTU & H_2S content determination Time, date and results of each inspection and corrective actions taken
Averaging period	Monthly, or as set by the Department

Appendix B: 5050 BHP SCCT Monitoring

5,050 BHP SCCT Engine

Monitoring approach:	*Periodic Monitoring*	*Compliance Assurance Monitoring [CAM]*
I. Indicator	**Calculated CO emissions & Measured NO_X emissions**	**Water to fuel weight ratio [WFR]**
A. Measurement approach	Fuel gas volume shall be monitored with a system capable of measuring and recording the flow rate and/or the parameters utilized for flow rate calculation. BTU & H_2S content of fuel gas stream shall be determined annually, or as set by the Department Pollutant emissions & CO emission factor shall be determined during performance and periodic tests.	Water injection and fuel consumption volumes shall be monitored with a system capable of measuring and recording the flow rate and/or the parameters utilized for flow rate calculation.
II. Indicator range	**CO emissions shall be maintained at <= 4.7 Lbs/Hr** **NO_X emissions shall be maintained at < = 42 ppmvd**	**@ Load = 1,800 kW WFR => 0.42** **@ Load = 2,200 kW WFR => 0.47** **@ Load = 2,900 kW WFR => 0.51** **@ Load = 3,180 kW WFR => 0.53** **@ Load = 3,300 kW WFR => 0.54**
	A deviation is defined as anytime the performance test, periodic test or the calculated emission rate exceeds the respective allowed emission rates.	A deviation is deemed to have occurred when the water to fuel ratio falls below the value noted in above table.
	A deviation triggers an immediate inspection, corrective action, and reporting within 48 hours or two work days.	A deviation triggers an immediate inspection and corrective actions that meet the requirements of 40 CFR Part 64.7(d) and reporting within 48 hours or two work days.
A QIP threshold	Not applicable	If the accumulated hours of deviation events occurring exceeds 5% of the SCCT engine operating time during any quarterly reporting period, a Quality Improvement Plan shall be developed and implemented.
III. Performance criteria		
A. Data representiveness	Fuel gas volume monitor shall be located immediately upstream of the engine. Fuel gas BTU & H_2S content shall be determined from samples that are representative of the fuel gas being consumed. Performance tests shall be undertaken while engine is being operated at normal loads.	Fuel gas and water injection volume monitor shall be located immediately upstream of the engine. Performance tests shall be undertaken while engine is being operated at normal loads.
B. Verification of operational status	Not applicable	Not applicable

C. QA/QC practices & criteria	Not applicable	A program for the water injection and fuel gas monitoring systems shall be developed and implemented that meets the requirements specified in the following regulations: 40 CFR 60 Subpart GG 40 CFR 60.13, Subpart A 40 CFR Part 60, App F 40 CFR Part 60, App B, PS 2 40 CFR Part 60, App B, PS 6 If a monitor fails its calibration tests, the monitor shall be taken out of service until repairs and/or replacements are made and a new calibration test is undertaken and passed.
D. Monitoring frequency	Fuel gas volume measured continuously. Fuel gas BTU & H_2S content shall be determined annually, or as set by the Department. Performance tests shall be undertaken once every five years. Periodic tests shall be undertaken once every six months, or as set by the Department.	Fuel gas and water injection volumes shall be measured continuously.
Data collection procedure	Calculate: Monthly CO emissions while utilizing the fuel volume, BTU content, emission factor and operating hours Fuel gas volume consumed Record: Monthly-CO emissions, Hours of operation, & Fuel gas volume consumed Record: Each occurrence Fuel gas BTU & H_2S content determination NO_X emissions during each periodic or performance test Time, date and results of each inspection and corrective actions taken	Record: Hourly and rolling three hour average water injection rates, Fuel gas consumption rates, & Calculated fuel gas to injected water weight ratios. Record: Each occurrence Time, date and results of each calibration. Time, date and results of each inspection and corrective actions taken
Averaging period	One month, or as set by the Department	Rolling three hour average

Appendix C: Sulfur Recovery System & Thermal Oxidizer Monitoring

Sulfur Recovery System and Thermal Oxidizer

Monitoring approach:	*Compliance Assurance Monitoring [CAM]*	*Compliance Assurance Monitoring [CAM]*
I. Indicator	**Sulfur recovery efficiency & SO_2 emission rate**	**Thermal Oxidizer firebox temperature**
A. Measurement approach	Inlet feed volume and sulfur content shall be monitored with a system capable of continuously measuring and recording the flow rate and/or the parameters utilized for flow rate calculation along with its sulfur content. Inlet volume and mass rate shall be the accumulation of the following gas steams: Solution Still Reflux Accumulator Heated Amine Flash Gas Accumulator Effluent volume and sulfur content shall be monitored with a system capable of continuously measuring and recording the flow rate and/or the parameters utilized for flow rate calculation along with its sulfur dioxide content. Effluent volume and mass rate shall be the accumulation of the following gas steams: Thermal oxidizer A continuous emissions monitoring system that is capable of assimilating the above inlet and effluent information, analyzing that information and making appropriate calculations for each monitoring cycle and each rolling three hour period while recording relevant information and calculation results shall be utilized.	Firebox temperature shall be monitored with thermocouple or equivalent device. A continuous emissions monitoring system that is capable of assimilating the above information, analyzing that information and making appropriate calculations for each monitoring cycle and each rolling three hour period while recording relevant information and calculation results shall be utilized.
II. Indicator range	**SO_2 emission shall be maintained at ≤ 64.8 Lbs/Hr** **Sulfur recovery efficiency % shall be maintained at between 99.7% and 99.4%, as determined by the following equation:** $$\%\ Eff = 99.7 - \left[\frac{17.91}{[\ \text{Sulfur feed rate (LTons/Day)}\ ]}\right]$$ An exceedance is defined as anytime the three hour rolling average SO_2 rate is > 64.8 Lbs/Hr or the three hour rolling average sulfur recovery efficiency is less than the value calculated while utilizing the above equation.	**Firebox temperature of shall be maintained at ≥ 1,400 °F** An excursion is defined as anytime the three hour rolling average firebox temperature is < 1,400 °F.

	An exceedance triggers an immediate inspection and corrective actions that meet the requirements of 40 CFR 64.7(d) and reporting within 48 hours or two work days.	An excursion triggers an immediate inspection and corrective actions that meet the requirements of 40 CFR 64.7(d) and reporting within 48 hours or two work days. The minimum firebox temperature may be modified upon receipt of Departmental approval.
A. QIP threshold	If the accumulated hours of exceedance events occurring exceeds 5% of the sulfur recovery system operating time during any quarterly reporting period, a Quality Improvement Plan shall be developed and implemented.	If the accumulated hours of excursion events occurring exceeds 5% of the sulfur recovery system operating time during any quarterly reporting period, a Quality Improvement Plan shall be developed and implemented.
III. Performance criteria		
A. Data representiveness	Each inlet sensor shall be located upstream of the sulfur recovery system at such a location that will allow the monitoring of all acid gas streams that enter the sulfur recovery system. Each effluent sensor shall be located at a point within the thermal oxidizer stack that would result in the monitoring of all of the gases exiting the sulfur recovery system through the thermal oxidizer stack.	Each temperature sensor shall be located within the thermal oxidizer combustion chamber or immediately downstream of the combustion chamber.
	Each volume sensor shall be accurate to within ±2.0%. Each content sensor shall be accurate to within ±5.0%.	Each temperature sensor shall be accurate to within ±1.0%.
B. Verification of operational status	Not applicable	Not applicable
C. QA/QC practices & criteria	A program for the inlet and effluent continuous emission monitoring system shall be developed and implemented that meets the requirements specified in the following regulations: 40 CFR 60.13, Subpart A 40 CFR Part 60, App F 40 CFR Part 60, App B, PS 2 40 CFR Part 60, App B, PS 6	Each temperature sensor shall be calibrated at a frequency in accordance with the manufacturer's specifications or other written procedures that provide adequate assurance that the device is calibrated accurately or by methods and procedures approved by the Department.
	If the sensor fails its calibration test, the sensor shall be taken out of service until repairs and/or replacements are made and a new calibration test is undertaken and passed.	If the sensor fails its calibration test, the sensor shall be taken out of service until repairs and/or replacements are made and a New calibration test is undertaken and passed.

Sulfur Recovery System and Thermal Oxidizer [Continued]

Monitoring approach:	*Compliance Assurance Monitoring [CAM]*	*Compliance Assurance Monitoring [CAM]*
I. Indicator	**Sulfur recovery efficiency & SO_2 emission rate**	**Thermal Oxidizer firebox temperature**
D. Monitoring frequency	Inlet volume or inlet volume parameters and inlet content shall be measured continuously. Effluent volume or effluent volume parameters and effluent content shall be measured continuously.	Firebox temperature shall be measured continuously.
Data collection procedure	Calculate and record hourly and rolling three hour averages of the following items: Volumes & sulfur mass rates of: Inlet streams & H_2S concentration analyses Thermal oxidizer effluent Allowed sulfur recovery efficiency Actual sulfur recovery efficiency Produced Sulfur Record calibration results, inspection results and corrective actions taken.	Record hourly and rolling three hour average firebox temperature. Record calibration results, inspection results and corrective actions taken.
Averaging period	Rolling three hours	Rolling three hours

NOTE: Monitoring outlined in this table was derived from the requirements of 40 CFR 60 Subpart LLL. Therefore, compliance with the requirements in this table satisfies the requirements of 40 CFR 60 Subpart LLL.

Sulfur Recovery System and Thermal Oxidizer - Opacity

Monitoring approach:	*Periodic Monitoring*
I. Indicator	**Opacity**
A. Measurement approach	Provided the thermal oxidizer is being operated and facility operating personnel notice visible emissions being emitted from the thermal oxidizer, a daily visual emission observation on the thermal oxidizer shall be undertaken. Duration of each observation shall be >= 15 minutes and<= 60 minutes Each observation shall be conducted with either: Test Method 9 of 40 CFR Part 60 – OR – Test Method 22 of 40 CFR Part 60
II. Indicator range	**(1) No more than one 6-min. average opacity reading shall exceed 20%; OR, (2) No 6-min. average opacity reading shall exceed 40%; OR, (3) The accumulated time of observed visible emissions shall not exceed 12 minutes.** A deviation is defined as anytime the observed 6-minute average opacity exceeds 20% for the 2nd time, or 40% for the 1st time, when utilizing Method 9. A deviation is defined as anytime the accumulated time in which visible emissions were observed exceeds 12 minutes per observation when utilizing Method 22. A deviation triggers continued visible emissions observations at a frequency suitable to defining the duration of the visible emission deviation event. One observation shall be undertaken to establish the end of the visible emission deviation event. A deviation triggers an immediate inspection, corrective action, and reporting within 48 hours or two work days.
III. Performance criteria	
A. Monitoring frequency	Daily
Data collection procedure	Record: Daily Each 15 second observation reading Record: Each occurrence – Time, date and results of corrective actions taken
Averaging period	Six minutes

Appendix D: Emergency Flare Monitoring

Emergency Flare

Monitoring approach:	*Periodic Monitoring*	*Compliance Assurance Monitoring [CAM]*
I. Indicator	**Assist gas to acid gas volume ratio**	**Operate flare with a flame or spark present at all times when a process gas stream may be sent to it.**
A. Measurement approach	Inlet assist gas and acid gas feed volume shall be monitored with a system capable of measuring and recording the flow rate and/or the parameters utilized for flow rate calculation or estimated utilizing material balances, computer simulations, special testing, or other approved methods.	The flare tip shall be equipped either with a continuous sparking flame igniter that is monitored by an amp meter–OR– an equivalent device –OR– visual observation –OR– with a continuously burning pilot light that is monitored with either a thermocouple or an equivalent device or by visual observation.
II. Indicator range	**Acid gas to assist gas volume ratio shall be maintained at <= 1.0** A deviation is defined as anytime the actual ratio exceeds 1.0 If the accumulated hours of deviation events occurring exceeds 5% of the emergency flare's operating time during a semi-annual reporting period an immediate running of an air quality modeling study that utilizes the maximum inlet mass and flow rates that occurred during this period. The minimum ratio may be modified upon receipt of Departmental approval.	**Presence of a flame or spark at flare tip** A deviation is defined as when there was no spark or flame present at the flare tip when a process gas stream could be vented to it. A deviation triggers an immediate inspection and corrective actions that meet the requirements of 40 CFR Part 64.7(d) and reporting within 48 hours or two work days.
A QIP threshold	Not applicable	If the accumulated hours of deviation events occurring exceeds 5% of the flare's operating time during any quarterly reporting period, a Quality Improvement Plan shall be developed and implemented.
III. Performance criteria		
A. Data representiveness	Each volume monitor shall be located upstream of the flare and shall consist of a single device that monitors all streams or multiple devices that monitor individual or multiple streams.	Each flame igniter or flame monitor shall be located at the flare tip and focused on the area where gas exits the flare tip. Visual observations shall be made from the location that provides the best view of the flare tip and/or flare pilot lights or flare igniter.
B. Verification of operational status	Not applicable	Not applicable

C. QA/QC practices & criteria	Each volume monitor shall be maintained and calibrated in accordance with the manufacturer's specifications.	Each flame igniter or flame monitor shall be maintained and calibrated in accordance with the manufacturer's specifications, other written procedures that provide adequate assurance that the device is properly maintained and calibrated accurately, –OR– at least annually, whichever is more frequent. Repairs and/or replacements shall be made immediately when non-functioning or damaged parts are found. Flame igniter arc length shall not exceed 10% of arc interval and shall have an arcing frequency of no greater than once every 3 seconds.
D. Monitoring frequency	Inlet acid gas and assist volume shall be measured continuously.	Pilot flame shall be monitored either continuously with a thermocouple or daily with visual inspections if operating staff is on site. Flame igniter - arcing frequency shall be monitored either continuous with an amp meter or daily with visual inspections if operating staff is on site.
Data collection procedure	Calculate &/or record an inlet volume that is representative of the volume entering flare.	Record time, date and duration of each incident of when no spark or flame was present at the flare tip when a process gas stream could have been sent to it.
	Record daily hours of operation.	Record time, date and results of each visual observation.
	Calculate & record H_2S feed rate.	
	Record time, date and results of each calibration.	Record time, date and results of each calibration.
	Record time, date and results of each inspection and corrective actions taken.	Record time, date and results of each inspection and corrective actions taken.
	Submit air quality modeling results to the Department within 60 days of the end of the semi-annual period.	
Averaging period	Monthly	Instantaneous

Emergency Flare - Opacity

Monitoring approach:	*Periodic Monitoring*
I. Indicator	**Opacity**
A. Measurement approach	Provided the flare is being utilized to burn a gas stream other than the pilot light fuel gas stream, a daily visual emission observation on the flare shall be undertaken. Duration of each observation shall be: >= 15 minutes and <= 120 minutes Each observation shall be conducted in accordance with either: Test Method 9 of 40 CFR Part 60 Or Test Method 22 of 40 CFR Part 60
II. Indicator range	**The accumulated time of opacity observance shall not exceed 5 minutes.** A deviation is defined as anytime the accumulated time exceeds 5 minutes during any observation while utilizing 22. A deviation triggers continued visible emissions observations at a frequency suitable to defining the duration of the visible emission deviation event. One observation shall be undertaken to establish the end of the visible emission deviation event. A deviation triggers an immediate inspection, corrective action, and reporting within 48 hours or two work days.
III. Performance criteria	
A. Monitoring frequency	Daily
Data collection procedure	Record: Daily Each 15 second observation reading Record: Each occurrence Time, date and results of corrective actions taken
Averaging period	Instantaneous